THE AMERICAN
JOURNAL OF PHARMACY

FEBRUARY, 1900.

THE DRUG AND HERB VENDORS OF THE SIDEWALKS OF PHILADELPHIA.

By Charles H. LaWall.

Pharmacy as a profession has made great progress during the past few decades, but, while it has developed along certain lines, the development has mainly pertained to improvements in the preparation of galenicals and it has lost ground in other directions, particularly in pharmacognosy, or, to apply a broader term, pharmaceutical botany.

The pharmacist of to-day buys his drugs in the ground or powdered condition, when formerly he purchased them in the original condition and ground them himself, and still previous to that time he collected many of them with his own hands. In testimony of this fact we have only to consult some of the earlier works on pharmacy, where pharmaceutical calendars will be found, each separate month containing a list of the plants in flower, a list of the plants which are to be collected, and a list of the preparations which can be prepared most advantageously at that particular period of the year.

It may prove interesting as well as instructive to quote, from one of these works, these lists for one of the twelve months, as many pharmacists of to-day are so busy with their efforts to keep up with the times that they have but little time to devote to the study of former conditions.

In "Strumpf's Allgemeine Pharmakopœ," published in Leipzig in 1861, such a calendar is given for use in Germany, but it will illus-

trate the subject just as well for the purpose. The list for the month of August is, in part, as follows:

PLANTS WHICH BLOOM DURING AUGUST.

Althæa officinalis,
Artemisia Absinthium,
Calendula officinalis,
Cannabis sativa,
Capsicum annuum,
Chelidonium majus,
Chenopodium ambrosioides,
Colchicum autumnale,
Conium maculatum,
Hyoscyamus niger,
Inula Helenium,
Lappa bardana,
Marrubium vulgare,
Matricaria Chamomilla,
Melissa officinalis,
Nicotiana Tabacum,
Origanum majorana,
Papaver somniferum,

Drug and Herb Vendor and his Stand.

Coriandrum sativum,
Cucurbita pepo,
Datura Stramonium,
Fœniculum officinale,
Gentiana lutea,
Glycyrrhiza glabra,
Humulus Lupulus,
Pimpinella Anisum,
Polygala Senega,
Saponaria officinalis,
Solanum Dulcamara,
Tanacetum vulgare,
Taraxacum officinale,
Veronica officinalis.

DRUGS WHICH ARE TO BE COLLECTED DURING AUGUST.

Absinthii herba,
Allii bulbus,
Lavandulæ flores,
Lini semina,

Calendulæ flores,
Capsici annui fructus,
Carvi fructus,
Chenopodii herba,
Conii fructus,
Coriandri fructus,
Fœniculi fructus,
Horder fructus,
Hyoscyami semina,
Juglandis cortex viridis,
Lobeliæ herba,
Nicotianæ herba,
Origani herba,
Papaveris capita,
Phytolaccæ fructus,
Quercus glandes,
Sambuci fructus,
Sinapis semina,
Tanaceti herba cum floribus,
Veratri albi cormus.

ANIMAL DRUG TO BE COLLECTED DURING AUGUST.

Formicæ.

PREPARATIONS TO BE MADE DURING AUGUST.

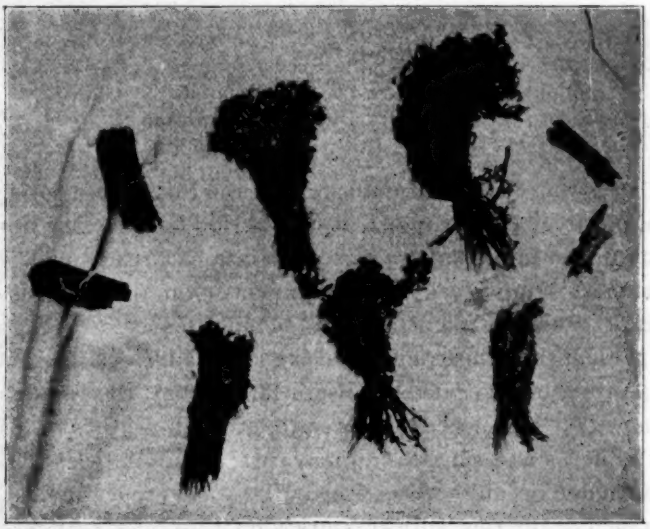
Extractum elaterii,
" gratiolæ,
Oleum majoranæ,
Succus dauci,
Succus juniperi,
" sambuci,
Syrupus mororum,
" rubi idæi.

The foregoing list would indicate that the pharmacist, or, to use a more applicable term, druggist, at that period had no easy time of it, as it was almost impossible to buy preparations already made and the completeness of his stock was dependent upon the druggist's personal efforts to a great extent. But conditions have changed and at the present time this comprehensive knowledge of drugs and their seasons has almost entirely disappeared from the profession of pharmacy. It has not died out altogether, however, for the collectors of herbs and simples in many rural communities still possess the knowledge of indigenous drugs that was at one time a necessary branch of pharmaceutical education.

This altered condition of affairs has been detrimental to the profession in some respects, as many pharmacists have even forgotten the appearance of the crude drugs from which their preparations are manufactured; but the present tendency toward the standardization of preparations involves careful determination of the genuine character of the drugs used, and this knowledge of crude drugs may, of necessity, be restored to the profession of pharmacy, where it undoubtedly belongs. The question of economy has also a prominent bearing upon this subject, as most drugs are now sold at a price which would render it extremely unprofitable for the pharmacist to collect his own drugs as in former times, but there is no reason whatever why we, as pharmacists, should not be familiar with the

appearance of those official plants which grow almost at our very doorsteps, for it undoubtedly lends interest to an otherwise dry subject.

There are few pharmacists in this city who are aware of the fact that more than 75 per cent. of the official drugs are growing within a radius of a few miles of Philadelphia, but such is the case; and, what will be still more surprising to many persons, more than 50 per cent. of the official drugs are offered for sale on the street corners by persons who earn a living by collecting them and preparing them for sale. These persons are perfectly familiar with the season



Bundles of Herbs and Drugs as sold by the Street Vendors.

and habitat of each drug and are acquainted with the medicinal uses of every drug collected by them.

The subject of drug vendors and their wares has received little attention by pharmaceutical writers, but it was a subject in which the late Professor Henry Trimble was deeply interested, and it was at his suggestion that the writer of this paper began collecting notes on the subject several years ago.

The large amount of miscellaneous information which was obtained made the task of compilation very difficult, but while the subject has by no means been exhausted, it has been thought best to present

the material already obtained, though the author must confess his inability to handle the subject in the way that it deserves.

The persons who earn a livelihood by collecting and selling drugs are in nearly all cases colored people who live in New Jersey. The localities from which they come embrace the whole of Camden and Gloucester Counties. The flora of this section is of exceptional variety, as there are a number of large tide-water creeks, among which may be mentioned Pensauken, Cooper's, Newton, Big Timber, Little Timber, Woodbury and Mantua Creeks.

These people also gather wild flowers and ferns in their appropriate seasons, and at the holiday season they add holly, mistletoe and laurel to their stock in trade. The flowers, ferns and evergreens are the most conspicuous items of their stock, arranged usually on several boxes or barrels which serve as counters, and many persons who pass them daily are unaware of the fact that each vendor has an assortment of roots, barks and herbs, all of excellent quality and each tied up in packages, which retail for 5 cents. These packages usually average from 2 to 4 ounces in weight, the price therefore being higher than the drugs purchased in the market. The quality, however, is exceptional, and for display specimens or for microscopic work no better source of supply could be found.

The subject has been divided into three parts, namely: (1) official drugs; (2) unofficial drugs; (3) miscellaneous flowers and fruits.

The following list enumerates those official drugs which form part of the regular stock in trade, or which will be collected for persons who wish to purchase them:

Absinthium,
Allium,
Althæa,
Asclepias,
Aspidium,
Calamus,
Castanea,
Chenopodium,
Chimaphila,
Cimicifuga,
Convallaria,
Cypripedium,
Euonymus,
Eupatorium,
Geranium,
Matricaria,
Melissa,
Mentha piperita,
Mentha viridis,
Pepo,
Phytolacca fructus,
" radix,
Podophyllum,
Prunus virginiana,
Quercus alba,
Rubus,
Rumex,
Salvia,
Sambucus,
Sanguinaria,

Hamamelis,
Hedeoma,
Inula,
Iris,
Juglans,
Juniperus,
Lappa,
Lobelia,
Marrubium,
Sassafras,
" medulla,
Scutellaria,
Stramonium,
Tanacetum,
Taraxacum,
Ulmus,
Veratrum viride,
Xanthoxylum.

Among this number are some, such as absinthium, salvia, etc., which do not grow wild, but which are cultivated by these people.

There are some other official drugs which grow in this locality concerning which no information could be obtained, viz.:

Apocynum,
Caulophyllum,
Chelidonium,
Dulcamara,
Leptandra,
*Serpentaria,
Spigelia,
Triticum,
Viburnum opulus,
" prunifolium,
Zea.

The lack of information concerning some of these drugs may be due to the fact that they have names for them which are not generally known; indeed, the confusion of common names was one of the difficulties encountered in making inquiries about certain drugs, and it would be an interesting subject for some one to take up. Another reason for some of these drugs not being known is probably due to the fact that these people live in New Jersey, and the plants, while common on the Pennsylvania side of the Delaware, are rarely met with on the New Jersey side.

The fact remains that, out of sixty-nine official drugs concerning which inquiries were made, forty-seven were obtainable.

(2) Of the unofficial drugs, the following list comprises all those of which positive information was obtained:

Angelica,
Balmony,
Balm of Gilead buds (balsam poplar buds),
Basil,
Bugleweed,
Burdock,
Catnip,
Cleavers,
Partridge berry,
Pennyroyal,
Plantain,
Prickly pear,
Ragweed,
Queen of the meadow,
Sarsaparilla,
Smartweed,
Speedwell,

*This was reported as having been exterminated in this locality by collectors.

Comfrey,
Coltsfoot,
Fivefinger,
Fleabane,
Hawkweed,
Heal all,
Hogweed,
Hop clover,
Horsemint,
Horsenettle,
Ironweed,
Johnswort,
Life everlasting,
" root,
Liverwort,
Meadow rue,
Motherwort,
Mullein,
Parsley herb,
Spice bush,
Spikenard,
Sour gum,
Stone root,
Sweet birch,
" cicely,
" clover,
" fern,
" gum,
" marjoram,
Toad flax,
Touch-me-not,
Verbena,
White snakeroot,
Wild ginger,
" indigo,
Wintergreen,
Yarrow.

(3) Miscellaneous flowers, fruits and edible herbs:

Asters,
Azalea,
Black-eyed Susan,
Buttercups,
Christmas fern,
Clematis,
Columbine,
Crab-apple blossom,
Daisies,
Dandelion,
Day lily,
Dogtooth violet (adder tongue),
Flowering moss,
Fringed gentian,
Golden rod,
Hartford fern,
Holly,
Honey locust,
Honeysuckle,
Horseradish,
Hydrangea,
Ladies' slipper,
Lamb lettuce,
Laurel,
Lilac,
Lupine,
Magnolia,
Maiden-hair fern,
Marsh marigold,
Mock orange,
Mountain pink,
Persimmon,
Pitcher plant,
Pond lily,
Rabbit-foot clover,
Rhododendron,
Rosemallow,
Tiger lily,
Trailing arbutus,
Trumpet flower,
Violets,
Watercress,
Wild plum,
" rose.

Of course, it must be remembered that but few of these articles are obtainable at any one time, but the list for the entire year is surprisingly large. No single one of these vendors was found who was able to procure all of these, as their stock varies

according to the locality from which they come. The work of collecting the material for this paper has been of great interest, and photographs and specimens were obtained, which are herewith submitted.

35 POPLAR STREET, PHILADELPHIA.

BISMUTH SALICYLATE, BASIC.

BY LYMAN F. KEBLER.
Research Committee E, Pharmacopœia Revision.

Since the introduction of bismuth salicylate, by Dr. Desplat,[1] as a remedy for the treatment of typhoid fever, continued efforts have been made to bring this remedy prominently before the medical profession. And these efforts have met with some success, in that several of the later editions of the various pharmacopœias have recognized the basic salt and considerable quantities of it are being used at present.

Salicylic acid being both acid and phenolic in character, it is possible to prepare two series of salts, the most important having the following composition:

$$Bi(C_6H_4.OH.CO_2)_3 \quad BiOC_6H_4.OH.CO_2$$
$$Bi_2(C_6H_4.O.CO_2)_3 \quad BiO_2C_6H_4.O.CO_2$$

The product, however, commonly employed is the basic salt, in which the phenolic function of the salicylic acid remains intact. This article, theoretically, contains 62·15 per cent. of BiO or 64·356 per cent. of Bi_2O_3, after ignition.

A number of workers have, on several occasions, shown that the article of commerce varies very materially. To what extent this is true at present can readily be seen by a glance at the table below. That bismuth subsalicylate varies somewhat in composition is naturally to be expected, and the various pharmacopœias have recognized this fact by allowing a reasonable variation in the percentage content of bismuth oxide.

The variation in composition of bismuth subsalicylate is due to the proneness of the compound to decompose, in the course of its manufacture, which seems to be a common property of many of the basic bismuth salts. The United States Pharmacopœial Com-

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[1] 1883, *Medical Record*, Aug., 11.

mittee of Revision even deemed it undesirable to give a formula for such old and well-established bismuth compounds as bismuth subnitrate and subcarbonate. Nor did it prescribe any limits as to how much or how little bismuth these articles should contain. And in view of some recent investigations, this course has been a most commendable one. According to the commonly accepted formula, bismuth subnitrate should leave on ignition 76·413 per cent. of Bi_2O_3, but C. O. Curtman[1] found it to vary from 81·10 to 85·00 per cent., and the writer[2] found it to contain from 81·00 to 83·26 per cent.; and the per cent. of nitric acid varied very markedly. If, therefore, the compound $BiONO_3,H_2O$ exists, it is so unstable and difficult to prepare that not a single manufacturer is able to supply it. The same is true of the subcarbonate of bismuth.

The argument has been advanced that a variation in the composition of the basic salicylate causes a variation in therapeutic effect. This has probably resulted from a confusion between the so-called normal and the basic articles. For such an argument, considering the quality of bismuth subsalicylate now supplied, in the writer's opinion, is hardly as tenable as it would be with either the subnitrate or subcarbonate.

Basic bismuth salicylate is slowly decomposed by water, alcohol, glycerin, syrups, etc. An aqueous solution of sugar causes more rapid decomposition than plain water. This is probably due to the fact that salicylic acid is more readily soluble in a saccharine menstruum than in water. It would, therefore, appear that this bismuth salt must be considered as a molecular compound of bismuth oxide and salicylic acid, rather than a true salt.

From the above considerations it would not be surprising to find that the commercial article varied considerably, and in order to ascertain to what extent this is true, samples were secured from various sources and examined with the following results:

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[1] 1896, *Pharm. Era*, *15*, 43.

[2] 1896, AM. JOUR. PHARM., *68*, 422.

No.	Microscopical Appearance.	Physical Appearance.	Per Cent. of Bi_2O_3.	Reaction.	Moisture, Per Cent. of.	Nitrates.
1 . . .	Crystalline and amorphous.	White and bulky.	63·51	Acid.	0·37	Trace.
2 . . .	Crystalline and amorphous.	Bulky, with pinkish tint.	64·15	"	0·15	"
3 . . .	Crystalline and amorphous.	Pinkish tint.	66·20	"	0·60	Much.
4 . . .	Crystalline and amorphous.	White and bulky.	64·36	"	0·65	"
5 . . .	Crystalline and amorphous.	White and bulky.	64·50	"	0·53	Trace.
6 . . .	Crystalline and amorphous.	White and bulky.	63·42	"	0·20	"
7 . . .	Crystalline and amorphous.	White and bulky.	61·60	"	0·76	"

All contained a trace of chlorides.

The bismuth oxide was estimated in the usual manner.

Neither the metallic copper test of the British Pharmacopœia, '98, nor the test recommended by the German Pharmacopœia, III, for detecting nitrates, have given the writer satisfactory results. In fact, small quantities of added nitrates could not be detected by these methods. The best method found for this purpose, thus far, is the indigo test, which is applied as follows: mix 0·5 gramme of the salicylate with 3 c.c. of concentrated sulphuric acid; a reddish coloration will result, the intensity depending on the amount of nitrate present; to this solution add 4 drops of indigo, T.S., and if much nitrate is present the bluish color will gradually disappear at the ordinary temperature. A small amount of nitrate will rapidly destroy the color on warming.

L. Wolff[1] distinguishes the subsalicylate from the subnitrate by means of the microscope; the former being amorphous or granular while the latter is crystalline. This is neither a satisfactory test for the one nor the other, because the subnitrate may be amorphous and the subsalicylate is, for the greater part, crystalline.

Chlorides and sulphates may be detected by igniting 1 gramme of bismuth subsalicylate in a porcelain crucible, taking up the residue in pure nitric acid, diluting to 20 c.c. with water, carefully avoiding turbidity, neither barium chloride nor silver nitrate should produce more than a faint opalescence.

[1] 1883, AM. JOUR. PHARM., *55*, 554.

The British Pharmacopœia requires that alcohol in which bismuth subsalicylate has been shaken should not be colored on adding a few drops of iron chloride, absence of free salicylic acid.

As has been stated above, alcohol decomposes bismuth subsalicylate, consequently this test is too rigid.

Only traces of arsenic were detected by Marsh's test.

Bismuth subsalicylate is a white or pinkish-white, micro-crystalline-amorphous powder, nearly odorless and tasteless, insoluble in water, alcohol and glycerin, but is slowly decomposed by these liquids. On igniting 1 gramme in a porcelain crucible, from 0·62 to 0·64 gramme of residue should be left, corresponding to 62 to 64 per cent. of bismuth oxide. Not more than traces of chlorides, sulphates, nitrates or arsenic should be revealed when tested according to the above-described methods.

SYRUPUS AURANTII.

By F. W. Haussmann.

The desire for a less complicated process for preparing syrup of orange than the one directed by the Pharmacopœia has repeatedly been expressed.

The method of macerating the shredded peel in boiling alcohol appears to have few advocates.

The advantage of rapid manipulation, the evident object of the Pharmacopœia, is opposed by the liability of dissipating a portion of the volatile oil and consequently impairing the aroma of the syrup.

The official formula has been variously modified, concentrated tinctures, essences and infusions have been proposed, and the different suggestions range from simple admixture of the extracts with syrup to other more complicated methods.

Of these, the recommendation, based chiefly on the fact that the official title, Syrupus Aurantii, did not necessarily imply syrup prepared directly from the peel, to employ an alcoholic solution of the oil, deserves attention.

A formula, which directs the syrup to be made from spirit of orange, appears to possess desirable qualities, easy and rapid manipulation and a pleasant odor and taste for the preparation.

Syrups prepared directly from the oil, however, almost invariably acquire a terebinthinate odor on standing.

A syrup possessing the agreeable properties of orange must be

prepared from the peel subjected to extraction with alcohol in the cold.

This is the principle upon which the formulas of the 1870 and 1880 Pharmacopœias are based.

It appears, however, that the percentage of alcohol retained in the present syrup is excessive, and a more satisfactory preparation is obtained if the alcohol is partly allowed to evaporate.

A syrup of less spirituous flavor is thereby produced.

The following formula is based upon this principle, with retention of the precipitated calcium phosphate as medium for filtration:

SYRUPUS AURANTII.

Sweet orange peel, taken from the fresh fruit	50 grammes.
Precipitated calcium phosphate	50 "
Sugar	750 "
Alcohol, Water } of each a sufficient quantity to make	1,000 c.c.

Macerate the sweet orange peel, which should be as free as possible from the white inner layer, and grated, in 100 c.c. of alcohol during twenty-four hours.

Pour the mixture into a narrow percolator, allow the alcoholic extract to drain, and continue the percolation with small portions of alcohol until 100 c.c. of percolate have been obtained.

Mix the precipitated calcium phosphate in a mortar with 150 grammes of sugar and add the tincture with constant trituration.

Set the mixture aside in a moderately warm place until the greater portion of the alcohol has evaporated.

To the residue add 300 c.c. of water, transfer the whole to a filter and return the first portions of the filtrate, if necessary, until it runs clear.

In the filtrate dissolve the remainder of the sugar by agitation without heat, and add a sufficient quantity of water to make the product measure 1,000 c.c. Strain if necessary.

While conducting the above experiments, magnesium carbonate was substituted for precipitated calcium phosphate in a number of instances.

The syrup, prepared by filtration through magnesia, possesses a more attractive appearance, has a brilliant color and pleasant odor and taste.

The writer regards it as superior to syrup prepared by filtration through calcium phosphate.

SYRUPUS PRUNI VIRGINIANÆ.

By F. W. Haussmann.

The original researches upon syrup of wild cherry were conducted with the view of determining the proper amount of glycerin to be added to insure stability.

The quantity directed by the Pharmacopœia, 15 per cent. by volume, appears to be excessive, and in the course of the various determinations it was found that syrups containing 10 or even 5 per cent. of glycerin, with a corresponding increase of sugar, possess equal stability compared to the official preparation.

Entire omission of glycerin is not to be recommended, however, as it undoubtedly prevents precipitation in both syrup and infusion to a marked degree.

Syrup of wild cherry, with glycerin additions ranging from 3 to 15 per cent. by volume, will, however, invariably show a flocculent deposit on standing, but the volume of the precipitate is considerably increased in specimens to which no glycerin has been added.

The preserving action of the latter is shown to advantage in wild cherry infusions, as simple aqueous percolates deteriorate more rapidly.

Judging from the results of a number of trials, the writer is convinced of the necessity of the presence of glycerin in the syrup.

The proper time at which it is to be added received some attention.

The conclusion to make glycerin a part of the percolating menstruum was arrived at after a number of trials.

This is especially necessary in summer, as a slowly percolating infusion, even if allowed to drop upon glycerin, will rapidly turn cloudy.

The observation was repeatedly made in percolates from identical specimens of bark that with the increase of glycerin the infusion was correspondingly darker.

If the present official process is to be retained, the writer would recommend the reduction of the amount of glycerin to one-half, 75 c.c. to 1,000 c.c. of finished syrup, to make the same a part of the menstruum and to increase the amount of sugar from 700 to 750 grammes.

ACETOUS SYRUP OF WILD CHERRY.

The idea of employing a weak acetic acid menstruum in preparing syrup of wild cherry was not entertained until the possibility of its advantages was pointed out by Prof. Jos. P. Remington.

Opinions on the advisability of using acetic acid as menstruum are frequently voiced at present, and objections to this innovation are as usual vigorously recorded.

The employment of weak acetic acid in the preparation of syrups, besides those of garlic and squill, would not be an innovation in the Pharmacopœia, as a precedent is established in the case of syrup of ipecacuanha, and probably no pharmacist will return to the old method of preparing the syrup by admixture of fluid extract and syrup.

The writer admits that at the beginning he employed acetic acid in preparing wild cherry syrup with considerable reserve, if not prejudice, but as the acid percentage was decreased, the respect for the menstruum increased, and it was found that a preparation containing 1 or 2 per cent. of acetic acid furnished an excellent substitute for the official article.

As in the case of the latter, a number of trials were made to determine the proper amount of glycerin. Syrup containing 10 per cent. of glycerin and made with a 1 or 2 per cent. acetic acid menstruum was found to give the best satisfaction.

Employed to a limited degree in counter and dispensing practice, no objection has as yet been heard, and the pleasant acidulous taste is apparently an advantage from a mercantile standpoint.

The following is the formula for syrup prepared with a menstruum containing 1 per cent. of acetic acid:

Wild cherry, in No. 20 powder	150 grammes.
Sugar	750 "
Glycerin	100 c.c.
Diluted acetic acid, Water	of each a sufficient quantity to make 1,000 c.c.

Mix the glycerin with 300 c.c. of a mixture composed of 1 part of diluted acetic acid and 5 parts of water.

Moisten the wild cherry with a sufficient quantity of the liquid and macerate for twenty-four hours in a closed vessel, then pack it firmly in a cylindrical percolator and pour on the remainder of the menstruum. When the liquid has disappeared from the surface,

follow it by a mixture of diluted acetic acid and water in the same proportion as before, until the percolate measures 450 c.c.

Dissolve the sugar in the percolate by agitation without heat, strain and pass a sufficient quantity of the same acid mixture as before through the strainer to make the product measure 1,000 c.c. Mix thoroughly.

SYRUPUS ROSÆ.

By F. W. Haussmann.

This agreeable mildly astringent syrup is deserving of more frequent use.

It is prepared according to the Pharmacopœia by admixture of fluid extract of rose and simple syrup, which process, as the syrup is intended to be prepared extemporaneously, is satisfactory for ordinary purposes.

Syrup of rose is somewhat cloudy when thus prepared and shows a deposit on standing, the usual result of mixing fluid extracts with syrup. Should the syrup be required to be kept on hand for a time, the following formula yields a clear and bright syrup.

SYRUPUS ROSÆ.

Fluid extract of rose	125 c.c.
Diluted sulphuric acid	10 "
Sugar	750 grammes.
Water, a sufficient quantity to make	1,000 c.c.

Mix the fluid extract of rose with 300 c.c. of water, previously mixed with the diluted sulphuric acid.

Allow the mixture to stand for two hours, filter, and in the filtrate dissolve the sugar by agitation without heat, and strain.

Finally add a sufficient quantity of water through the strainer to make the syrup measure 1,000 c.c.

Mix thoroughly.

The advantages of adding diluted sulphuric acid are the production of a brighter colored syrup, an agreeable acidulous taste and possibly an increase in astringency.

The disadvantage, however, is the liability of the inversion of the sugar and consequent deposit of grape sugar on prolonged standing.

NOTES ON BEESWAX.

By H. V. Arny.

To the writer was submitted a sample of yellow wax for examination; the client—a pharmacist—having purchased a large stock and becoming suspicious of presence of resin (rosin). It was true that the specific gravity was found to be within the limits prescribed for pure wax, but the product behaved peculiarly under the U.S.P. test for resin, and—oh, rule of thumb!—*it tasted like rosin!* Before making claim of reparation, however, the pharmacist appealed to the writer for his opinion. The sample was of clear, good color, of the correct odor, but, on chewing, it did leave an acrid taste, suggestive of resin, U.S.P. Its specific gravity by immersion method at 20° C. was 0·9488; by Hager's method at 25° C. it was 0·9456. It melted at 64°–65° C., all the data affirming the purity of the wax.

Tested by pharmacopœial methods, it showed no traces of paraffin nor soap, and, emitting no acrolein vapors, contained no fats. At the resin test, however, a halt was necessary, since, when boiling 1 gramme wax with 35 c.c. of a 15 per cent. solution of soda, the filtrate yielded a precipitate with hydrochloric acid—a precipitate that had led the client astray. It was faint and flocculent, and struck a practised eye as something other than rosin; hence other resin tests were applied.

Five grammes wax, treated with cold alcohol, yielded 0·1441 gramme residue on evaporation of the alcoholic filtrate, or 2·88 per cent., but a trifle over the alcohol soluble part (2·4 per cent.) of pure wax. Again, Allen's test for resin—nitric acid and ammonium hydrate—gave only a yellow color, showing conclusively the absence of resin.

The precipitate by the U.S.P. resin test was evidently not caused by resin, and its flocculence suggested that it was merely cellulose dissolved from the filter paper by the 15 per cent. solution of soda. Accordingly the test was repeated with the liquid that had been filtered through sand, and such a filtrate produced no precipitate with hydrochloric acid, showing clearly that the precipitate in the first-named case was cellulose, rather than abietinic acid.

It is therefore advisable that, in the next Pharmacopœia, the text of this test be amended to read "no precipitate should be produced in the liquid *after filtration through glass-wool or asbestos*, by hydro-

chloric acid," etc.; for the natural interpretation of the present test is filtration through paper.

Does not such an experience as the one above cited suggest the advisability of giving, whenever possible, in the next Pharmacopœia two tests for the same impurity? A practicing chemist is rarely content to make an assertion based on one experiment, and usually confirms his first result by a second method. Such confirmatory tests he searches out in his library; but the average druggist does not usually possess a large collection of works of reference. Of course he should, but he does not, and, since the Pharmacopœia is intended as his work of reference *par excellence*, it should supply his lack of books as far as possible.

Further examination of the wax showed that its acid and ester numbers (see *Proc. A. Ph. A.*, XLVI, 883) were within the limits assigned pure beeswax, the acid number being 19·2 in one estimation and 20 in a second, while the ester number was 75·2 in the first trial and 75·4 in the second. An estimation of the iodine number (see *Proc. A. Ph. A.*, XLV, 680) was prevented by the illness of the writer.

During the examinations here mentioned, efforts were made to isolate the principle giving the wax its rosin-like taste. Boiling with water a half hour and extraction of the filtrate with ether yielded a trace of sticky residue, which was intensely bitter. This suspicious product was evidently an accidental impurity transmitted to the wax by the bee.

Not only has illness put a stop to the work, but, by a curious fatality, the death of the client has put the tracing of the source of the suspected wax beyond the power of the writer—thanks to unfortunate procrastination.

The bitter principle is worthy of further investigation, and any information that leads to securing a new supply of the product will be gratefully received.

COVINGTON, LA., December, 1899.

RECENT LITERATURE RELATING TO PHARMACY.

DETECTION OF SHIKIMI FRUIT IN STAR ANISE.

Several proposed methods of distinguishing between these closely similar fruit have been critically tried by Dr. W. Lenz (*Schw. Wochenschr. für Chem. und Pharm.*, 1899, 45), who used in his in-

vestigation eight authentic samples of star anise and ten of shikimi. The processes employed were: (1) Tschirch and Oesterle's, which is based on the differing behavior of alcoholic extracts of the two fruits when poured into water—a method criticised by von Vogl; (2) difference in size and appearance of the aleuron grains found in the seed; (3) Collin's method, based on presence of numerous and large sclerenchyma cells in the stipe of star anise and comparative absence of same in the stipe of shikimi.

The writer finds the last two methods practically useless, while Tschirch's is both practical and accurate. He finds little ground for von Vogl's strictures and entirely eliminates cause for same in the following modification of the process:

One carpel of the suspected fruit is boiled in a test-tube for two minutes with 5 c.c. 95 per cent. alcohol. The cold liquid (which has lost about 1 c.c. in cooking) is filtered and the filtrate treated with four or five times its bulk of water. If the fruit was star anise, the liquid invariably becomes cloudy (due to anethol), while a shikimi extract remains clear.

When the clear diluted shikimi extract is shaken with petroleum ether (boiling under 60° C.) and separated, the ethereal layer leaves scarcely any residue on evaporation, and that trace has a disagreeable odor.

The cloudy star anise extract, on the other hand, when similarly treated, yields an ethereal layer which, on evaporation, leaves a yellow oily residue of anise odor. Efforts to obtain from this residue microscopic crystals of di-brom-anethol, or di-iso-nitroso-anethol-peroxide, were futile, but the presence of anethol was readily proven by the spectroscope. H. V. A.

MICROSCOPICAL IDENTIFICATION OF THE MYDRIATIC ALKALOIDS.

A study of the alkaloids of the Solanaceæ is reported by S. Vreven (*Ann. de Pharm.*, Louvain, 1899, 1). It is based on the microscopic examination of the precipitates of these alkaloids with the well-known reagents: compound solution of iodine, potassio-bismuthic iodide, potassio-mercuric iodide, phospho-tungstic acid, phospho-molybdic acid, gold chloride, platinic chloride, potassio-cadmic iodide and picric acid. Of these, the two last enumerated are the only ones giving crystals of sufficient individuality to be of value in identification, and these yield highly satisfactory results,

even when the alkaloids were mixed with decomposing urine. For mixtures of several alkaloids, the process is poorly adapted, crystals from such mixtures having vague outlines. For the characteristic crystalline forms of the several precipitates, the reader is referred to the illustrations in the original article.

The writer finds that the fusing point of the potassio-cadmic iodide precipitates of the several alkaloids is a valuable aid to identity. The atropine precipitate melts at 95° C., the hyoscyamine, daturine and duboisine precipitates all melt at 86°–87° C. This leads him to consider the last three alkaloids as identical.

H. V. A.

THE OXIDIZING FERMENTS OF ACONITE AND BELLADONNA.

E. Lepinois (*J. de Pharm. et de Chim.*, 1899, 49) reports a microscopical and chemical study of the ferments found in aconite and belladonna. His microscopical investigation consisted in treating sections of drugs with tincture of guaiac both before and after immersion in 90 per cent. alcohol. The oxidizing matter naturally gave a blue coloration with the guaiac and thus the location of the ferment was readily determined, and was found only in parenchyma, chiefly in living cells. None whatever was found in the fibrovascular bundles.

That the ferment was a constituent of the juice of plants was shown by these coloring blue with tincture of guaiac and blackening with solutions of resorcin, hydroquinone and pyrogallol. Such reactions failed with juices that had been heated to 100° C.

To prove that this oxidizing ferment performs its functions as an absorber of oxygen from the air, the writer placed a mixture of oxidizable matter (usually hydroquinone) and the juice in a flask, through the cork of which was passed a sealed glass tube. Such a flask was allowed to stand twenty-four hours in some cases, and two to three days in others. Then the point of the tube was broken under water, when the liquid passed in to occupy space left by absorbed air. Results showed that in a flask of 250 c.c. capacity, holding 20 c.c. juice and 50 c.c. of the hydroquinone solution, the absorption of gas ranged from 5 to 15 c.c. On the other hand, when boiled juice was employed, no absorption was noted.

Efforts made toward a quantitative estimation of absorbed oxygen and evolved carbonic oxide merely proved that such a reaction does occur.

Attempts at isolation of the ferment were scarcely successful, the product being almost void of oxidizing properties, showing that the boiling alcohol used in extraction destroyed the activity of the ferment. The ash of these products from both drugs were examined. That from aconite contained iron and scarcely any manganese; while in the belladonna product manganese predominated. This variant composition still leaves unsettled the question whether the oxidation by such ferments is controlled by manganese.

H. V. A.

PICROTOXIN.

The chemical literature touching this official is filled with conflicting statements, some investigators claiming it is a definite chemical compound—citing its constant melting point (199°–200° C.) as proof—while others insist it consists of two bodies. This view is held by Meyer and Bruger (*Ber. d. Deutsch. Chem. Ges.*, 31, 2958), who have separated the two bodies, calling them picrotoxinin and picrotin. The separation is accomplished with boiling chloroform, in which picrotoxinin dissolves with only traces of picrotin. Better, however, is the separation by treatment of picrotoxin with bromine, when a crystalline monobromo- derivative of picrotoxinin is formed, while the picrotin is unaffected. This method of separation is quantitative and shows that commercial picrotoxin consists of 54 per cent. picrotoxinin and 46 per cent. picrotin. The crystallization from a solution containing this proportion of the two substances yields a product identical with the official.

Picrotoxinin is obtained from the mono-bromo derivative by cooking with zinc dust and acetic acid. It crystallizes from acetic acid in fine colorless needles of melting-point 200–201° C., and gives orange-red coloration with concentrated sulphuric acid. Gaseous hydrochloric acid passed through its ethereal solution produces a polymere, picrotoxid, which melts at 308–310° C. Picrotoxinin reduces Fehling's solution on warming, is very bitter, and is the active physiological principle of picrotoxin. Its formula is $C_{15}H_{16}O_6$. Picrotin, $C_{15}H_{18}O_7$, crystallizes from hot water in white woolly crystals, melting at 248–250° C. It yields mono- and dibenzoyl derivatives and a nitro body. It is but slightly affected by alkalies and by potassium permanganate or bichromate.

H. V. A.

OIL OF THYME.

Understanding that oil of thyme was often falsified by addition of oil of turpentine and abstraction of its natural phenols, thymol and carvacrol, M. Duyk (*Journ. de Pharm. d'Anvers*, 1899, 41) investigated the substance, and found that, in many cases, the charge was true. Concerning the addition of turpentine, he learned from eye-witnesses that in the crude process of distillation employed by the peasants in the south of France it is usual to place in the bottom of the still body a layer of pine and fir branches, and thereon the herb is laid, the excuse being that the pine needles keep the thyme from scorching.

The writer critically compared the pharmacopœial tests, working with absolutely samples of the oil, and he decides that the best oil is yielded by cultivated thyme (*T. vulgaris*), and that such a product contains no pinene, and yields at least 20 per cent. of thymol and carvacrol. Such an oil will dissolve in its own volume of 84 per cent. alcohol, will boil at not less than 170° C., and will be inactive or slightly laevogyre toward polarized light. After removal of thymol and carvacrol with solution of soda, the residue will be slightly dextrogyre. The oil will have the density of not less than 0·885, and gives negative results with the refractometer. If to 1 c.c. oil and 4 c.c. liquid paraffin be added 2 c.c. sulphuric acid, specific gravity 1·86, of the same temperature, the rise in temperature on mixing will not be greater than 18° C. H. V. A.

ANABSINTHIN.

Adrian and Trillat have continued their researches (*Nouv. Rem.*, 1899, 93) on absinthium. They scout the idea that their body is absinthin, citing that their compound, which they call anabsinthin, differs from absinthin by being insoluble in ether and by its higher fusing-point (258–260° C.). Moreover, its formula is $C_{18}H_{24}O_4$. It is extracted by treating absinthium with 85 per cent. alcohol, evaporating extract, treating residue with chloroform, filtering and evaporating chloroformic extract, which is then dissolved in 90 per cent. alcohol. This solution is freed from extraneous matter by addition of lead acetate, the lead removed with tartaric acid and the filtered liquid evaporated. From this residue the anabsinthin is extracted with benzin and purified by crystallization from alcohol. It is a crystalline, intensely bitter substance, which gives a color reaction

with sulphuric acid, and neither reduces Fehling's solution nor forms a phenyl hydrazine compound. From the benzin left on removal of the anabsinthin the writers obtained another body in the form of yellow needles, melting at 165° C., and showing on combustion the formula $C_{52}H_{51}O_{20}$. H. V. A.

FABIANA IMBRICATA.

To the knowledge of Pichi Dr. H. Kunz-Krause (*Arch. der Pharm.*, 1899, 1) has made a valuable contribution, taking up the subject where left by Trimble, Schroeder and Deitz (JOURNAL, 1889, p. 405, *et seq.*), confirming their work and entering into minutiæ.

An infusion of the leaves showed a considerable quantity of magnesium phosphate, a tannin which he calls Fabiana-tannoid, a fluorescent substance proven to be chrysatropic acid (oxy-methyl cumarol, β methyl æsculêtin), while no alkaloids are present, the sole basic principle being choline. The leaves also contain a soft resin, which yields, on heating to 100° C. with diluted acid, a volatile oil, Fabiana tannoid, chrysatropic acid and an inactive sugar.

The ethereal extract from the infused leaves contained chlorophyl, chrysatropic acid, the volatile oil "Fabianol" (which analyzed to $C_{50}H_{90}O_4$, boiled at 275° C., and had refractive value 1·5076) and Fabiana-resin, which appeared in microscopical crystals, melting at 280° C. The wood yielded chrysatropic acid and choline.

These preliminary observations were followed by a careful study of the several characteristic bodies.

The resin yielded two bromine derivatives, one colorless, of formula $C_{18}H_{28}Br_2O_2$, and one that was yellow and of variable composition. It also yields a mono-acetyl and a mono-benzoyl derivative and gives negative results to the methoxyl group test. Hydriodic acid and red phosphorus reduces it to a wax-like substance having the formula $C_{54}H_{98}O_2$. This fact, together with the similarity of the resin to Fabianol, $C_{54}H_{90}O_2$, brings the author to the conclusion that the combustion formula of the resin, $C_{18}H_{30}O_2$, should be trebled. Lastly, the resin, when melted with soda and potassa, oxidizes to a body behaving like vinyl-para methoxyl-pyro-catechin, a point of value in the study of resins.

The tannin proved a glycotannoid, behaving like caffetannic acid, which the author previously showed to be glycosyl dioxy cinnamic acid. It yields a bromin product, whose halogen percentage

closely approximates that of di-brom-methoxy-dioxy-cinnamic acid. This is of interest, since the lactone of the latter is chrysatropic acid, another constituent of pichi.

From analyses of its lead and copper salts the constitution of the tannoid is supposed to be $C_{16}H_{20}O_{10}H_2O$. Direct estimation, as usual with non-crystalline tannoids, does not yield definite results.

H. V. A.

BULGARIAN OPIUM.

S. Hartwich (*Schweiz. Wochenschr. f. Chem. et Pharm.*, 1899, 121) gives an interesting account of the culture of opium in the Balkan region, the data being mostly secured from a former student now engaged in the enterprise. While European Turkey has long produced opium, the culture in Bulgaria dates from 1896, when the wheat culture began declining.

The fields, preferably in level meadows, are plowed two or three times, and are sown between February 20th and March 15th, although some sow in September, risking frost, however, in order to secure hardier plants. When the plants are about 8 centimetres (or 3 inches) high, the field is hoed, thereby removing many of the young plants, leaving only twenty-five to thirty-five remaining to the square metre. Later the field is hoed again to remove weeds. The plants flower in May, and shortly after the flowers fade and the ovary enlarges the collection of the opium begins, the incisions being made in the afternoon and the dried juice scraped from capsule in the morning, just as in Turkey. Care is taken to avoid cutting to the interior of the capsule, in order that the ovary remain sufficiently intact to produce the seed.

The writer gives the planter's actual figures concerning a crop. This shows that a field of 20 dekars (about 5 acres) yielded 25 kilos (55 av. pounds) opium and 1,300 kilos (2,860 av. pounds) seeds, a crop bringing $304. The outlay for this crop, even including items of rent, taxes and interest, was $107.20.

Interesting are the figures relating to the cost of labor; for instance, the collection of the 2,860 pounds of seed cost 5.20, while six hoeings of the five-acre field cost $1.60.

Examination of nine samples of Bulgarian opium showed their morphine strength, estimated for dry opium, ranged from 6·6 per cent. to 20·75 per cent.

H. V. A.

BOILING POINT OF MIXED LIQUIDS.

J. K. Haywood, *J. Phys. Chem.*, 1899, *3*, 317.

Previous investigations were carried out by measuring the vapor pressure with varying composition, the temperature being kept constant. The author considered it more profitable to proceed as in actual practice; he, therefore, examined the variation of the boiling point under constant pressure. This method had previously been adopted by Thayer (*J. Phys. Chem.*, 1898, *2*, 382; 1899, *3*, 36). The apparatus used was essentially that of Orndorff and Cameron (*Am. Chem. J.*, 1895, *17*, 517). The materials employed were carefully purified; the thermometer graduated to $\frac{1}{10}$ of a degree was carefully calibrated and all readings are uncorrected. Three diagrams are given. These contain a number of carefully plotted curves, which may be studied with profit, by referring to the original article.

From the results of his investigations the author has drawn the following conclusions:

(1) All mixtures of the following pairs of liquids boil at temperatures between the boiling points of the constituents: alcohol-water, alcohol-ether, chloroform-carbon tetrachloride, acetone-water and acetone-ether.

(2) A solution containing 17·5 per cent. of alcohol in carbon tetrachloride distils without change at 65·5° C., approximately, under 768·4 millimetres pressure.

(3) A solution containing 12·5 per cent. of methyl alcohol in chloroform distils without change at 54° C., approximately, under 770·2 millimetres pressure.

(4) A solution containing from 12–13 per cent. of methyl alcohol in acetone distils without change at 55·9° C., approximately, under 764·8 millimetres pressure.

(5) A solution containing from 15–20 per cent. of carbon tetrachloride in acetone distils without change at a temperature but 0·05° below that of pure acetone, and all mixtures containing more than 40 per cent. of acetone boil within 1° of the boiling point of acetone itself.

(6) The close proximity of the boiling points of the constituents appears to be a favorable condition for the existence of a maximum or a minimum point on the boiling point curve. Similarity of constitution, however, seems to be a strongly modifying condition.

(7) In general, one constituent remaining the same, the mixtures with substances of similar chemical constitution yield similar boiling point curves. One well-marked exception appears: carbon tetrachloride and chloroform in acetone. L. F. KEBLER.

PERMANENCE OF IPECAC PREPARATIONS.

Mr. R. Glode Guyer (1899, *Pharm. Jour.*, 622) assayed a sample of liquid extract of Rio ipecac, and found it to contain only 1·528 per cent. of alkaloids, whereas two months previously the same preparations contained 2·08 per cent. A liquid extract prepared from Carthagena root and standardized to assay 2·1 per cent. (age not given) was also assayed, and found to contain 1·525 per cent. These figures show that the liquid extracts of both the Rio and Carthagena roots depreciate exactly parallel.

Three samples of wine of ipecac collected from retailers assayed 0·0788, 0·0384, 0·0348 per cent. A similar number from wholesalers contained 0·0882, 0·1022, 0·077 per cent. of total alkaloids. Standard, 0·1 per cent.

The questions suggested by this investigation are: Does the alkaloidal value depreciate by age, or do the alkaloids deposit on standing, and are then removed by subsequent filtration?

NOTE.—In 1897 Mr. C. H. LaWall, this JOURNAL, *69*, 619, reported on a thirty-three-year-old fluid extract, which contained 2·76 per cent. of total alkaloids.

In assaying, the precipitate was carefully excluded, so that the above per cent. represents only the alkaloids in solution. Recently the abstractor received several samples of fluid extract of ipecac, made by Dr. Squibb, with the information that they were very old, and probably worthless. On the average these samples, after filtering, contained 1·72 per cent. of total alkalcids. L. F. K.

NEW REMEDIES OF 1899.[1]

Acetanili t-sulphonate of Sodium.—Soluble antipyretic.

Acetophenone-ortho-oxyquinoline.—$C_9H_6NO.CH_2.CO.C_6H_5$. Hypnotic and antineuralgic.

Acet-ortho-amido-quinoline—$C_9H_6N(NHCH_3CO)$. Antipyretic.

Acet-orthotoluid.—$C_6H_4(CH_3)NHCOCH_3$. Orthotolyl-acetamide. Antipyretic. Dose: 0·1–0·3 gramme (1½–5 grains).

[1] Merck's Report, 1900, p. 19.

Acet-paratoluid.—$C_6H_4(CH_3)NHCOCH_3$. Paratolyl-acetamide. Antipyretic. Dose: 1–2 grammes (15–30 grains).

Acetyl ethyl-phenylhydrazine.—$C_{18}H_{22}N_4O_2$. Antipyretic.

Acid, Pipitzahoic.—$C_{30}H_{20}O_6$. Active purgative principle of pipitzahoac. Dose: 0·2–0·3 gramme (3–5 grains).

Acoin.—Dipara-anisyl-monophenetyl-guanidine hydrochlorate. Local anesthetic in eye practice in 0·1 per cent. solution.

Acthol.—Cetyl alcohol. Vehicle in cutaneous affections.

Aghara.—Gaskaral H. Astringent and diuretic. Dose: 30–60 c.c. (1–2 fluid ounces) of 1 : 20 infusion.

Agoniadin.—$C_{10}H_{14}O_{12}$. Glucoside from bark of *Plumeria succuba*. Used in intermittent fever. Dose: 0·12–0·25 gramme (2–4 grains).

Airogen.—An iodized bismuth compound intended for use as a vulnerary.

Aldunea.—Analgesic.

Alepton, P.—Colloidal ferromanganese peptonate.

Alepton, S.—Colloidal ferromanganese saccharate.

Alkasal.—Aluminium-potassium salicylate. Astringent and antiseptic.

Aluminium Cascinate.—Intestinal astringent. Dose: 0·25–0·3 gramme (4–5 grains).

Aluminium-Potassium Salicylate.—See Alkasal.

Amido-acetone-ethyl-disulphone.—Amidosulfonal.

Amidocinnamic-acid Ethyl Ester, Meta-.—Properties like those of cinnamic acid; also local anesthetic.

Amidocinnamic-acid Methyl Ester, Meta-.—Like the preceding.

Amidosulfonal.—Amido-acetone-ethyl-disulphone. Sedative.

Amyl Nitrite, Carbonated.—See Carbonated Amyl Nitrite.

Anisidine Citrate, Para- (Primary).—Monoanisidine citrate. Antirheumatic and febrifuge.

Annidalin.—$C_6H_8I_2OI$. Triiodophenol. (Not to be confounded with thymol iodide, also known as "annidalin.")

Antimellin.—Glucoside isolated from the fruit of *Sisygium Jambolanum*. Employed in diabetes.

Antipyrine Tannate.—$C_{11}H_{12}N_2O.C_{14}H_{10}O_9$. Compound containing 37 per cent. antipyrine and used like the latter. Dose: 1·5–3 grammes (24–45 grains); children ⅓ to ½ as much.

Arsenic Caseinate.—A soluble arsenic compound for internal administration.

Aspidium Spinulosum.—Anthelmintic. Dose: 3–4 grammes (45–60 grains) of extract.

Aspirin.—Acetylsalicylic acid. Succedaneum for sodium salicylate.

Asterol.—Soluble modification of mercury sulphocarbolate (hydrargyrol). Surgical antiseptic and bactericide.

Ayapana.—The herb of *Eupatorium triplinerve* (*E. ayapana*), Vall. Tonic and stomachic.

Balatin.—Creamy sap from a South American tree. Used as a skin varnish and vehicle in cutaneous diseases.

Benzoyl Peroxide.—Bactericide and disinfectant.

Bisol.—Soluble bismuth phosphate.

Bromated Phtalimide.—$C_6H_4(CO)_2NBr$. Used in cutaneous affections.

Calliandra Grandiflora.—Reputed antiperiodic.

Calmin.—Compound (?) of antipyrine and heroin used in asthma, etc.

Carbonated Amyl Nitrite.—Amyl nitrite saturated with carbonic oxide. Used like amyl nitrite by inhalation.

Cheiranthin.—Glucoside from leaves and seeds of *Cheiranthus cheiri.* Acts like the digitalis group.

Chioliin.—Antiseptic dermic.

Chloralbacide.—Chlorine substitution product of albumin. Tonic in gastric and intestinal affections.

Chloralbacide-sodium.—Compound of chloralbacide and sodium. Used in gastric and intestinal affections. Dose: 1–2 grammes (15–30 grains) before meals.

Chloretone.—Acetone-chloroform; tertiary trichlorbutyl alcohol. Hypnotic and anesthetic.

Chloro-iodolipol.—Disinfectant and antiseptic.

Chlorozone.—Disinfectant and deodorizer.

Cinnamyl-metacresol.—Hetocresol.

Collargol.—Colloidal silver. Internal and external antiseptic.

Coriamyrthin.—$C_{30}H_{30}O_{10}$. Glucoside from *Coriaria myrtifolia.* Cardiac stimulant.

Crenasol.—Antiseptic liquid.

Creosote, Chlorinated.—Antitubercular.

Cupri-aseptol.—Copper sulphocarbolate.

Cuprol.—Copper nucleide. 6 per cent. Cu.

Cystogen.—"Ammonia salt of formaldehyde." Genito-urinary antiseptic.

Diacetphenetid.—

$$C_6H_4<\begin{matrix}OC_2H_5\\N(CO.CH_3)_2\end{matrix}.$$

Derivative of phenacetin used like the latter.

Diacetyl para-ethyl-amidophenol.—Monoethylated acetyl-para-amidophenol. Analgesic and narcotic.

Diacetyl-para-methyl-amidophenol.—Monomethylated acetyl-para-amidophenol. Analgesic and narcotic.

Diastol.—An extract of diastase.

Diiodophenol Iodide.—See Phenol diiodide.

Dionin—

$$\begin{matrix}C_2H_5O\\HO\end{matrix}>C_{17}H_{17}NOHCl + H_2O.$$

Ethyl-morphine hydrochlorate. Readily soluble and efficient succedaneum for morphine, especially in coughs and in the morphine habit. Dose: 0·015–0·06 gramme (¼–1 grain).

Dithan—Trional.

Dormiol.—Amylene-chloral. Hypnotic. Dose: 0·5–3 grammes (8–45 grains).

Egols.—Compounds of mercury with para-sulphonic acid and a phenol.

Ethyl-phenacetin.—$C_6H_4(OC_2H_5)N(C_2H_5)CH_3CO$. Hypnotic.

Eugenoform.—Sodium salt of eugenolcarbinol. Antiseptic and bactericide. Dose: 0·5–1 gramme (8–15 grains).

Eumenol.—A fluid extract prepared from the Chinese plant tang-kui, kau-kui, wön-row. Efficient emmenagogue.

Febralgene.—Antipyretic.

Fectol.—Disinfectant.

Ferrinol.—Iron nucleide. 6 per cent. Fe.

Fluoroform.—Succedaneum for hydrofluoric acid as spray in aqueous solution in inhalation in tuberculosis.

Fluoroform Water.—Aqueous solution of gaseous fluoroform. Used in tuberculosis and lupus. Dose: Teaspoonful four or five times daily.

Formaldehyde-Sulphocarbolic Acid.—$2(CH_2OH).C_6H_3.OH$. Wound antiseptic.

Guaiacol Camphorate.—Antitubercular.

Guaiaform.—Disinfectant.

Guaiamar.—

$$C_6H_4<\begin{matrix}OC_3.H_7O_2.\\OC_3H_3\end{matrix}$$

Guaiacol glyceryl-ester. Succedaneum for guaiacol. Dose: 0·2–1 gramme (3–15 grains).

Hæmoform.—Iron-albumin preparation.

Hæmostat.—Topical application for nosebleed.

Hæmotrophin.—A fluid hemoglobin preparation.

Heroin Hydrochlorate.—Diacetylmorphine hydrochlorate. Succedaneum for morphine.

Hetokresol.—Cinnamyl-meta-cresol. Antitubercular. Used like sodium cinnamate.

Hetol.—Sodium cinnamate. Antitubercular.

Homocresol.—Guaiacol-ethyl; guëthol. Succedaneum for guaiacol.

Hyrgol.—Colloidal mercury.

Iodomuth.—$Bi_4C_7H_7I_2O_5$. Siccative antiseptic and alterative. Dose: 0·06–0·6 gramme (1–10 grains).

Iodothymoform.—Iodothymol-formaldehyde. Condensation product of thymol and formaldehyde. Vulnerary and surgical antiseptic.

Iodozen.—$C_6H_2I(COOCH_3.ONa)$. Iodine derivative of methyl salicylate. Antiseptic, discutient, alterative and absorbent.

Kalagua.—Extract prepared from a South American plant. Antitubercular. Dose: 0·2–0·5 gramme (3–8 grains).

Kau-Kui.—See Eumenol.

Kestin.—Antiseptic and deodorant.

Kresoform.—Condensation product of formaldehyde and creosote.

Lanoform.—Compounds of adeps lanæ with formaldehyde used in skin diseases.

Laurotetanine.—$C_{19}H_{23}NO_5$. Alkaloid from the bark of *Tetranthera citrata*, Nees. Tetanic.

Lipogenin.—Ointment base occurring in solid and liquid form; solvent for iodine for external use.

Lyptol.—Antiseptic ointment base.

Melonemetin.—Bitter principle from melon root. Emetic and purgative. Dose: 0·05–0·07 gramme (¾–1⅛ grains).

Melon Root.—Substitute for ipecac as an emetic; purgative. Dose:

Of cultivated root, 25 grammes (6 drachms), of wild root, 0·5–0·7 gramme (8–11 grains).

Mercurol.—Mercury nucleide. 10 per cent. Hg. Bactericide and antiseptic.

Meta-amido-cinnamic Acid Ethyl-ester.—Local anesthetic.

Meta-amido-cinnamic Acid Methyl-ester.—Local anesthetic.

Methenyl-ortho-anisidine.—Compound of ortho-anisidine and ortho-formic-acid ester. Local anesthetic.

Methyl-phenacetin.—$C_6H_4(OC_2H_5)N(CH_3)CH_3CO$. Hypnotic.

Methyl-Urethane.—$C.O.NH_2.OCH_3$. Urethylane. Hypnotic.

Monoacetylresorcin.—Used in cutaneous diseases like resorcin.

Modoformol.—Antiseptic dressing.

Morphine Caseinate.—Compound of morphine and caseine, readily soluble in water.

Morphine Mono-ethylether Hydrochlorate.—See Dionin.

Mutase.—Nutritive prepared from leguminous plants.

Naphtoformin.—Condensation product of alpha- or beta-naphtol, formaldehyde, and ammonia. Antiseptic for cutaneous diseases.

Naphtol-Eucalyptol.—Compound of alpha- or beta-naphtol and eucalyptol. Surgical antiseptic.

Nargol.—Silver nucleide. 10 per cent. Ag.

Negrolin.—Disinfectant.

Nirvanin.—Hydrochlorate of diethylglycocoll-para-amido-ortho-oxybenzoic-acid methylester. Local anesthetic in 0·1–0·5 per cent. solution.

Nucleides.—Compounds of nucleol with oxides of various metals (iron, copper, silver, mercury, etc.).

Nucleol.—Nuclein obtained from yeast.

Oculin.—Glycerinic extract of the ciliary body of the eyes of oxen.

Oxydol.—Solution of hydrogen peroxide.

Oxymethylphtalimide.—$C_6H_4<\begin{matrix}CO\\CO\end{matrix}>NCH_2OH$. Surgical antiseptic.

Pentodyne.—Analgesic and antipyretic.

Phebalium Argenteum.—A West-Australian Rutaceæ credited with vesicating properties.

Phecine.—Sulpho-metadihydroxy-benzene. Antiseptic dermic.

Phenegol.—$C_6H_5\begin{matrix}\diagup O\\\diagdown SO_3K\end{matrix}NO_2=Hg=\begin{matrix}O\diagdown\\SO_3\diagup\end{matrix}O_2H_5C_6$. Mercury-potassium nitro-paraphenolsulphonate. Antiseptic and bactericide.

Phenetidine Citrate Para-.—Monophenetidin citrate. Antirheumatic and antipyretic.

Phenol Diiodide.—Diiodophenol iodide. Succedaneum for aristol.

Phenoleum.—Antiseptic.

Phenoxycaffeine.—$C_8H_9(OC_6H_5)N_4O_2$. Analgesic. Dose: 0.25 gramme (4 grains).

Pimpinellin.—Bitter principle isolated from root of *Pimpinella saxifraga.*

Pipitzahoac.—Mexican name for root of *Perezia adnata.* Purgative. Dose: 3–5 grammes (45–75 grains).

Quinine Caseinate.—Compound of quinine and casein.

Quinine Sulphocresotate.—Internal antiseptic.

Salfene.—Analgesic and internal antiseptic. Dose: 0.3 gramme (5 grains).

Saophen.—Antineuralgic and analgesic.

Sapodermin.—An antiseptic soap said to contain from 0.5 to 1 per cent. of mercury albuminate.

Silberol.—Silver paraphenolsulphonate: Hydrargyrol. Vulnerary and antiseptic.

Sodium Acetanilid-sulphonate.—Soluble antipyretic.

Sodium Meta-vanadate.—Vaunted succedaneum for arsenic. Dose: 0.001–0.008 gramme.

Sodium Methylacetanilid-sulphonate.—Antipyretic.

Sodium Persulphate.—$Na_2S_2O_8$. Surgical bactericide and vulnerary. Used in 3–10 per cent. solution.

Sodium Phenacetinsulphonate.—Soluble succedaneum for phenacetin. Antipyretic.

Steriline.—Ointment-base and vehicle.

Strychnine-Sodium Nitro-Salicylate.—A water-soluble strychnine salt for internal use.

Sudol.—Mixture of adeps lanæ and glycerin with 3 per cent. formaldehyde. Used in skin diseases and in excessive perspiration.

Sulfosot.—Potassium creosote-sulphonate. Antitubercular. Dose: 0.3–1.3 grammes (5–20 grains) several times daily.

Sulpho-paraldehyde.—$(C_4H_4S_2)_3$ Tri-thialdehyde. Hypnotic.

Tang-Kui.—See Eumenol.

Tannocasum.—Compound of tannin and casein. Intestinal astringent.

Tartaric-acid Diphenyl Ester.—$CHOH.COOC_6H_5$. Antirheumatic and antipodagric.

Thermol.—$C_{14}H_{15}NO_3$. Antipyretic and analgesic.

Thymol Carbonate.—Succedaneum for thymol for internal use.

Triphenetolguanidine hydrochlorate.—Local anesthetic in eye practice.

Trithialdehyde.—See Sulpho-paraldehyde.

Urethylane.—See Methyl-urethane.

Urosin.—Mixture of quinic acid and lithium citrate in tablet form. Uric-acid solvent.

Vasothion.—Compound of vasogen and sulphur, used in chronic skin diseases.

Wŏn-Row.—See Eumenol.

Zinol.—Mixture of zinc acetate and alumnol.

THE NEW ELEMENT VICTORIUM.—The new element to which Sir William Crookes gave the provisional name of *Monium* has been renamed *Victorium*. It is less basic than yttria and more basic than most of the earths of the terbia group.—*Brit. and Col. Drug.*, 1899, p. 265.

THE CAMPHOR TREE is being planted as a street tree in New Orleans. A tree in a 4-inch pot in 1883 is now 35 feet high and 52 inches in circumference. —*Meehan's Monthly*, 1899, p. 168.

CURLED HORSEHAIR forms one of the best mechanical devices for cleansing the skin that has yet been discovered. About 3 drachms of curled hair are made into a loose pad. It retains its shape, is easily cleansed before and after each surgical operation; bichloride solutions do not affect it; it may be kept in alcohol, and thus being sterilized, is always ready for use.—Abstract in *N. Y. Med. Jour.*, Sept. 23, 1899.

OPALISIN, a new proteid principle, has been discovered by Wroblewski. It receives its name from the opalescent appearance of its solutions. It was obtained by the addition of sodium chloride to the fluid remaining after the precipitation of the casein in human milk by hydrochloric acid.—*The Amer. Pract. and News*, 1899, p. 233.

HYDROCYANIC ACID GAS has been recommended by Willis G. Johnson as a lethal agent, to be used in place of the rope or the electric current in capital punishment.—*Sci. Amer.*, 1899, p. 299.

DEXTROSE is the principal sugar in gentian root. Its identity has been proven by Hérissey (*Jour. Phar. Chem.*) by its rotary power and the melting point of its osazone.—*Brit. and Col. Drug.*, 1899, p. 522.

THE SEEDS OF DATURA FASTUOSA contain, according to Mareevw (*Chem. Centralb.*), about 1·5 per cent. of hyoscyamine.—*Ibid.*

EDITORIAL.

MICRO-ORGANISMS AND DISEASE.

While our present knowledge of electricity may be considered to be a child of the nineteenth century, it must be admitted that our knowledge of bacteriology is essentially that of the youngest child of this century. It is only a comparatively few years ago that the eminent physicist, Balfour Stewart, referred to the micro-organisms that were suspected of causing disease as representing a world of creatures, of which we know as little as of the inhabitants of Mars. How much attention has been given to the study of the different micro-organisms, bacteria in particular, is shown by the voluminous literature on the subject, including not only the various periodicals devoted entirely to this subject, but other publications as well during the past ten years. Beginning with the remarkable results of the labors of Pasteur, we find that in the hands of various investigators the studies of the various micro-organisms have unquestionably aided the manufacturer and physician in their respective vocations, and we can safely say that we are dealing with a form of life that we do and shall know more about in the immediate future than of the life on any of the other planets in years or even centuries to come.

In regard to the subject of disease being due to various forms of micro-organisms, which had its advocates more than 2,000 years ago, it must be said that "there still exists a controversy between the bacteriologists and the older pathological school over the role which is played by the bacterium as a cause of disease. While Koch and his pupils still hold largely to the orthodox teaching that the bacteria alone represent the 'cause' of those diseases which are designated as bacterial, the opponents of this view will only recognize the bacteria as partial causes, and find in certain changes of the tissues, which they designate as predisposition, auxiliary causes of disease. Some go as far as to deny the etiological influence altogether of the bacilli."[1] A large number of experiments have been made which would tend to show that in both animal and plant life, the latter in particular, there must be a certain lack of tone, or a predisposition on the part of the plant or animal, before the bacteria become active, *i. e.*, the tissues must undergo certain changes before they can become diseased bacterially.

While there are evidences of the more or less accidental discovery of ways and means for combating disease by the ancient Hindus and Persians, it must be admitted that it has been demonstrated that in at least certain cases it is the presence of certain micro-organisms, or at least the production of metabolic products from them, that causes disease and that the serum-therapy of the past few years, as scientifically applied in the administration of certain antitoxins, in at least some cases, justifies the labors that are being put forth by a large class of investigators, viz., the bacteriologists. But while the germ theory appears entirely admissible in specific infections in which rare forms of bacteria are constantly associated, as in glanders or anthrax, "it is well to remember that such virulent affections as variola, scarlatina, yellow fever and syphilis appear to have no bacterial causation. When a germ is really the

[1] See the following: *Pediatrics*, 1898, p. 507; *Eclectic Med. Jour.*, 1899, p. 553; *Amer. Pract. and News*, 1899, p. 283; *Medical Age*, 1899, p. 857; Editorial in this JOURNAL, 1899, p. 94.

cause of a disease, modern methods of cultivation, staining, or both, readily demonstrate its existence, and when no germ can be found, it by no means logically follows that one must be present. It is generally admitted that the bacterium is pathogenic, by virtue of certain highly poisonous toxins, or ferments, which are either set free during its life or after its death. There is every reason to believe that substances equally poisonous and pathogenic may be formed without the aid of pathogenic bacteria. Schleich, the noted investigator, has notes of a surprising number of cases of wound infection in which pathogenic bacteria are not at all in evidence. He explains these cases of infection as due to catalytic or contact chemical action; for instance, rancid oil possesses a ferment potency, and only in this way can we explain the infinite variety in wound infection. If the cause of infected wounds is a streptococcus, we would have typical symptoms, one case would resemble another, or in a word, the streptococcus should cause a specific affection. All talk about 'increased virulence,' 'favorable soil,' etc., is,to a certain extent, begging the question. Schleich, in addition to (1) decomposing oils, has described a group of wounds from (2) infected saliva. Close observation teaches us that the bite of every species of animal has a distinct individuality. Dissection wounds, infected by decomposing fluids, constitute a third group. It appears to be certain that the pathogenic agency in all such cases is a ferment. Half a century or more ago pathologists wrote much of ferments as causes of disease, but at that period we had no evidence that such bodies existed in pathology. We now know that ferments play a part in disease, that they are able to liquefy solid tissues and coagulate albuminous fluids. One of the most striking forms of local surgical infection takes the form of a solidification and necrosis of subcutaneous fat, and surely nothing but a ferment could produce such a condition; while it is almost certain that this ferment is not of specific, bacterial origin, but may be formed in the disintegration of organic compounds, in which, at most, only harmless saprophytes play a part. The truth is that men of the type of Rosenbach and Hueppe—two of the pioneers of bacteriology—have always had conservative leanings in regard to the pathogenic power of bacteria. It is the man without practical knowledge of micro-organisms who claims everything in pathology as the work of the latter, and it is another sciolist who takes the opposite ground of bacteriological nihilism. The attitude of Schleich is, therefore, one to be copied by men at once conservative and wise."[1] The subject is one of great interest, and while apparently positive information of all kinds is at our command, it is well to remember that the truth as finally revealed will no doubt tend to show that certain of the micro-organisms may exist in a symbiotic relationship in the plant and animal, others apparently only live on tissues when in an unhealthy condition. Still, in other cases, a diseased condition of the organism is due to the fact that either the leucocytes have not been able to destroy the invading pathogenic bacteria or that the organism has not produced physiological antagonistic substances to counteract the poison secreted or excreted by the bacteria. Our knowledge of bacteria is more objective than subjective, and until more extended results and observations are at our command in regard to the relationship between micro-organisms in the healthy and diseased condi-

[1] See *Pediatrics*, 1899, pp. 304-305.

tions of plants and animals, we may expect an abundance of speculation and a multiplicity of theories regarding this subject. Even after a savant like Pasteur has illuminated such a subject as fermentation, we have seen, as was pointed out in last month's editorial, that the exact relationship between micro-organisms and fermentation is a more complicated and interesting one than at first supposed. The same will, no doubt, prove true in the study of micro-organisms and diseases of animals and plants.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A MANUAL OF ORGANIC MATERIA MEDICA AND PHARMACOGNOSY. By Lucius E. Sayre, B.S., Ph.M., Dean of the School of Pharmacy, Professor of Materia Medica and Pharmacy in the University of Kansas. Second edition, revised, with Histology and Microtechnique, by Wm. C. Stevens, Professor of Botany in the University of Kansas. With 374 illustrations. Philadelphia: P. Blakiston's Son & Co. 1899.

The plan of this work is a comprehensive one, the intent of the author evidently being to give the greatest possible amount of information in the least possible space. The scope of the work is lessened from that of the first edition by dropping out the chapters on "Morphology" and "Organic Remedies Formed by Synthesis." The first of these could be well spared, as it was too much abridged to be of special value, but the dropping out of the latter is a decided loss. The book is designed for the use of students making a systematic study of organic drugs, but several features make it of value as a reference book.

In the fore part of the book is a "Conspectus," in which the drugs are elaborately classified, and in the back part a "synopsis" of Natural Orders, arranged in the order in which they are studied in the body of the book. The number of drugs studied is 628; those official are, of course, given the greater prominence, and are printed in larger type, so that one may know at a glance which are official. In the study of individual drugs, one gets in a condensed form a large amount of information, all of the important facts, excepting, perhaps, their history, being given in plain, concise language. A desirable feature is the dosage, which is given, not only of crude drugs, but of all official preparations. The large number of illustrations throughout the book, both macroscopic and microscopic, are excellent and true to the subject. Part III is an interesting chapter on "Insects Injurious to Drugs."

The chapters on "Elements of Plant Histology and Microtechnique" are very instructive. The proper use of the microscope and microtome is stated in a way that can be readily understood by the student.

In the chapters on Histology there is a commendable lack of extreme technicalities, that are too much in evidence in some recent works on this subject, intended for the use of students in colleges of pharmacy.

After enumerating the many excellent qualities of this book, one feels like passing over the fact that it contains some errors. For example, on page 123, under "Source of Coca," is this phrase: "The bush bearing coca *bean* is extensively cultivated," etc. Students are apt to get "Coca" and "Cacao" mixed in their minds, and this phrase tends to add to the confusion. The per cent.

of oil of lemon in Spir. Aurantii Comp. is stated to be 20 per cent.; it is 5 per cent. Spiritus Anisi is omitted under official preparations of Oleum Anisi. Under Physostigma, reference is made to the "Curved radicle." The radicle does not exist in the embryo, and recent works on botany refer to the organ by its proper name of Caulicle. "Extractum Phytolaccæ Fluidum" is placed under the fruit, instead of the root. The habitat of "Sandarac" is given North *America*, instead of *Africa*. Digitalis is said to be most commonly adulterated with mullein, a most improbable adulterant, and never found, at least in recent years.

The acridity of Rhus Toxicodendron is stated to be due to toxicodendric acid. Extended research, made three or four years ago by Professors Pfaff and Balch, of the Harvard Medical School, showed the poisonous principle to be an oil, to which they gave the name of toxicodendrol.

It may be said that errors occur in most books, but it is also to be said that a book specially designed for students is valuable in inverse ratio to the number of errors.

Notwithstanding this, however, the work is a valuable one, and will be largely used as a text and reference book.

C. F. NIXON.

LEOMINSTER, MASS.

PROCEEDINGS OF THE AMERICAN PHARMACEUTICAL ASSOCIATION, at the forty-seventh annual meeting, held at Put-in-Bay, O., September, 1899

An abstract of the Proceedings of the forty-seventh annual meeting of the A. Ph. A. has already been given in the October issue of this JOURNAL. The Proceedings as published contain, in addition, the Report on the Progress of Pharmacy, the Constitution, By-Laws and Roll of Members. The most valuable part of the book, outside of some of the original papers, lies in the Report on Progress of Pharmacy. The Proceedings have been brought out again on good time, which reflects creditably on the Secretary. It is unfortunate, however, that the matter of indexing is not so sufficiently complete as to render the volume as valuable as it otherwise would be. No mention is made in the index of the improved formula for solution of magnesium citrate, given on p. 75, or of the improved formulæ for syrup of tolu, on pp. 75, 76, or of the improvements on other pharmaceutical preparations, etc., as contained in the valuable report of the Chairman of the Committee on Practical Pharmacy. The same criticism of failing to index them applies to papers enumerated and abstracted from the Proceedings of the different State Associations, on pp. 784-794, as well as to the names of deceased members of whom obituary notices are given in the Report of the Committee on Membership. It is not necessary to say that the value of a good book lies in a comprehensive and working index. The editing of such a work is not a small task, and when one considers the limited time in publishing the book, it appears remarkably free from mistakes, and we find that nearly all of the unimportant things have been omitted, while the important matter has been condensed as much as possible. It is questionable, however, if the discussions should not be even more condensed. Such a procedure, it is true, would tend to rob the Proceedings of much of their value, particularly to those members who do not for various reasons attend the meetings.

LEXIKON DER KOHLENSTOFF-VERBINDUNGEN, von M. M. Richter. Zweite Auflage der "Tabellen der Kohlenstoff-Verbindungen nach deren empirischer Zusammensetzung geordnet." Hamburg and Leipzig: Verlag von Leopold Voss. 1899. London: Williams & Norgate; Paris: H. Le Loudier; New York: G. E. Stechert.

This work consists of 35 Lieferungen, which are published in the form corresponding to Beilstein's Handbuch der organischen Chemie, 3 Aufl., and it may be said that it can be employed as an index of this valuable book. In 1883 M. M. Richter published his "Tabellen der Kohlenstoffverbindungen," which contained the mention of about 16,000 compounds. It is estimated that in Beilstein's Handbuch there are about 57,000 organic compounds described, whereas, in the present edition of Richter, the title of which has been changed as above noted, 67,000 organic compounds are considered.

In the consideration of all the carbon compounds known up to date, the author has arranged them in a manner conforming to the arrangement recommended by the Council of the German Chemical Society, and introduced into the Berichte in 1898.

The arrangement of the compounds depends first upon the number of carbon atoms in them and then upon the number of elements which, in addition to carbon, are contained in the compounds. The succession of the elements combined with carbon is determined by their frequency of occurrence in some cases, as with H, O, N; Cl, Br, I, F; S, P; whereas the others are arranged in alphabetical order, as Al, As . . . Zr. So that if one is desirous of looking up cocain one turns to the C_{17} group with three elements and under $C_{17}H_{21}O_4N$ are given the melting points, derivatives and important references to literature, including Beilstein. But here is also given corresponding comparative information of no less than sixteen isomeric compounds, as atroscin, i-scopolamine, hyoscin, etc. The literature to which references are given is that which relates particularly to the preparation, properties and decomposition of the carbon compounds. No reference is made to purely theoretical papers, nor those with analytical, mathematical, crystallographic or medico-physiological information. The literature is fully treated up to the end of the first quarter for 1899, and the publishers propose to edit yearly supplements to the Lexikon. The work is not only to be regarded as an index *par excellence* to Beilstein, but is also an index to the important chemical literature on the preparation and properties of the carbon compounds, as well as treating tersely of properties of the compounds themselves. The book is such as one continually desires in laboratories where organic chemical work is being carried out, and no manufacturing plant or chemical laboratory or library is complete without this well-digested and conveniently arranged Lexikon, which is published at such a reasonable price, being M. 1.80 for each Lieferung.

A SYSTEM OF INSTRUCTION IN QUALITATIVE CHEMICAL ANALYSIS. By Arthur H. Elliott, Ph.D., Emeritus Professor of Chemistry and Physics, and George A. Ferguson, Ph.B., Professor of Analytical Chemistry and Director of the Laboratory in the College of Pharmacy of the City of New York. Third Edition, 1899. Published by the authors at 115 West Sixty-eighth Street, New York. Price, $1.50.

The first and second editions of this manual were reviewed in this JOURNAL (February, 1893, and March, 1894). The authors state that in this edition the

field has been widened and the work made more useful by numerous additions, and, in some instances, by the substitution of schemes which have been found to be shorter and to give better results when used by the beginner in chemistry. Thus, the scheme for acids has been changed, a number of radicals being included which were not mentioned in the last edition, and an endeavor is made to make this more practical for mixtures containing the interfering acid radicals. The sections are numbered consecutively throughout the book, but the index references are to the pages, and seem to be quite complete. The book is of convenient form and size for ready reference. S. P. S.

SEMI-ANNUAL REPORT OF SCHIMMEL & CO. (Fritzsche Brothers). Leipzig and New York. October, 1899.

These semi-annual reports, containing as they do so much information on the essential oils, may be said to have been for years the harbingers of enlightenment and instruction on the special properties characterizing pure essential oils, and distinguishing them from the sophisticated products. It will be welcome news to those in the United States who do not have a working knowledge of German, that the masterly treatise on "Essential Oils," by Gildemeister & Hoffmann (already reviewed at length in this JOURNAL, 1899, p. 439), will be translated into English. We are informed that both French and English translations of this work will be ready by the 1st of May, 1900.

A most excellent *résumé*, as usual, is given of the progress relating to the scientific as well as commercial aspect of the essential oils during the past six months. Some of these we will call attention to in later issues of this JOURNAL.

"The property of aqueous solutions of sodium salicylate, of giving a clear solution with the oxygenous constituents of essential oils, has been carefully studied by M. Duyk.[1] His experiments show that the maximum power of solution is possessed by a solution of sodium salicylate in an equal part of water, a colorless syrupy liquid of 1·240 specific gravity. Duyk determined the solubility of a number of pure alcohols, ketones, aldehydes and phenols by dissolving 1 c.c. of the material in 4 c.c. of the salicylate solution above referred to, and adding water by drops, under constant shaking, until a permanent cloudiness ensued. He thus obtained the following results:

Eugenol solution required, for separation				3·5	c.c. water.
Geraniol	"	"	"	2·5	" "
Benzaldehyde	"	"	"	2·5	" "
Carvone	"	"	"	2·0	" "
Citral	"	"	"	1·7	" "
Cineol	"	"	"	1·5	" "
Cinnamic aldehyde	"	"	"	1·5	" "
Citronellal	"	"	"	0·5	" "

"The hydrocarbons of the terpene series are insoluble, or nearly so, and can therefore be mostly separated from the oxygenous bodies. Duyk distinguishes the latter into two classes, according to their solubility.

(1) Easily soluble:

(a) Alcohols: Geraniol, linalool, citronellol, borneol, menthol.

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[1] *Bull. de l'Acad. Royale de Médecine de Belgique*, **1899**, 503.—*Ann. de Pharm.*, 5 (1899), 348.

(b) Aldehydes: Benzaldehyde, salicylic aldehyde, anisic aldehyde, cinnamic aldehyde, citral, citronellal, cuminic aldehyde, vanillin, heliotropin.

(c) Ketones: Carvone, methyl-heptenone, pulegone, methyl-nonylketone, menthone, thujone, camphor.

(d) Phenols: Eugenol, thymol and carvacrol.

(e) Cineol.

Of these bodies, menthol and camphor are less soluble than the others.

(2) Less soluble, or insoluble:

(a) Sesquiterpene alcohols: Santalol.

(b) Phenol derivatives: Anethol, safrol, apiol.

(c) Esters of borneol, geraniol, linalool and menthol.

"Finally, the author has examined a series of essential oils for their relative solubility, and recommends this property to be used in testing the purity of oils, a method which may be practical in certain cases. His suggestion, to use the process referred to for the preparation of oxygenous derivatives of oils, would probably not be technically possible, because of its great cost and the insufficient purity of the products obtained. For although hydrocarbons are practically insoluble in a pure salicylate solution, they are absorbed therein in a larger degree, if that solution already contains oxygenous bodies in state of solution.

"The most interesting result of Duyk's research is the establishment of the fact that alcohols are much more soluble than their esters. As an instance we may mention Bergamot oil, of which, under direct treatment, 12 per cent. was absorbed by the salicylate solution, and after saponification, 35 per cent. The difference of 23 per cent. represents linalool, which was present in the oil as linalyl acetate. Saponification had shown the oil to contain 31·5 per cent. of linalyl acetate, equal to 24·75 per cent of linalool.

"Although we do not implicitly share Duyk's expectations in the practical advantages of the sodium salicylate process, we believe that it may play a useful part in special cases, as well as in the scientific examination of essential oils."

EDITORIAL NOTES AND COMMENTS.

PHARMACY.—The question of the commercial purity of asafetida has been the subject of some interesting discussion in Great Britain as the result of a paper on this subject read by Mr. Moore, at the Society of Public Analysts. The B P. requires that asafetida shall yield not less than 65 per cent. of matter soluble in alcohol and shall not yield more than 10 per cent. of ash when incinerated. C. G. Moore and Dr. Martin [1] recently examined twelve samples of the gum resin, and found that the percentage soluble in alcohol ranged from 14 to 39 and the ash from 26 to 63. Inasmuch as samples could be had that gave only 7 per cent. of ash, there is reason to believe that the sophistication of asafetida was intentional by those who collected the drug. Mr. Moore further claimed that the requirements of the B.P. were too high unless steps could be taken to raise the standard of the commercial article. In

[1] *Chem. and Drug.*, 1899, p. 953.

the discussion which followed the reading of Mr. Moore's paper, Mr. Chattaway said that he had found asafetida in tears as required by the B.P. to give 8 per cent. of ash, and some even as low as 2 to 3 per cent. Mr. Cribb said that samples purchased of London chemists contained from 15 to 37 per cent. of ash. Mr. E. M. Holmes, acting as referee to the B.P. committee, had examined asafetida, and said that while the ash of the crude drug often reached from 20 to 60 per cent., still pure samples yielding as low as 8 per cent. had been found upon the market.

J. C. Umney,[1] in a recent paper, has given his results on the ash yielded by asafetida, which varies in the picked tears from 3·2 to 13·9 per cent.; in commercial masses from 35·5 to 62·2 per cent. and in powdered gum resin from 21·5 to 57·7 per cent. The solubility of asafetida in alcohol Mr. Umney finds to vary from 21·1 to 79·8 per cent., and furthermore that there is a great difference in the solubility in alcohol of 90 per cent. and 70 per cent. Mr. Umney claims that a case of the finest drug that enters the port of London would not yield 5 per cent. of the drug of the official standard, although tears could be picked answering the pharmacopœial requirements. The printing of proportions of ash yielded by the various grades of powdered gum as practised by some wholesalers is commended and it is recommended that in the preparation of the tincture the quantity of drug be increased so that 100 c.c. yield 12 grammes of extractive.

In a subsequent note on the subject, Mr. E. M. Holmes[2] points out the fact that in none of the more recent Pharmacopœias—German, Swiss and Japanese—does the per cent. of ash in asafetida exceed 10 per cent. as the maximum, and that Mr. Umney himself has shown that the tears will yield between 3–6 per cent. of ash. In regard to the scarcity of good asafetida Mr. Holmes considers it purely a matter of price, and that if dealers would pay the price the demand would soon bring about a supply. "The standard of purity for drugs to be used in prescriptions should be the very highest obtainable, and it can hardly be expected that the General Medical Council should countenance the use of a drug containing 20–60 per cent. of mineral matter to suit the convenience of cheap buyers, when an article containing less than 10 per cent. is procurable by those who will pay an adequate price for it and buy it when imported."

Mr. Holmes further considers that, inasmuch as there is a use for asafetida outside of prescription work, there is, therefore, a necessity for a normal or average standard of purity of drugs to be used for technical and domestic purposes. This is certainly an interesting subject, and involves a question as to whether high pharmacopœial and legal standards will drive out poor or sophisticated drugs, and as to whether low standards of articles for technical and domestic purposes (unless standardized and sold on standard) may not tend to keep the article from meeting the highest requirements in regard to purity for other purposes.

CHEMISTRY.—The explosion of 156 tons of *chlorate of potassium* which was properly packed and stored and in which no organic matter was present, at St. Helens, appears to be analogous, according to C. A. Lobry de Bruyn,[3] to a

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[1] *Chem. and Drug.*, 1899, p. 983.
[2] *Chem. and Drug.*, 1899, p. 1037.
[3] *Zeitschr. f. angew. Chem.*, 1899, p. 633; *Chem. News*, 1899, p. 270.

local fire which broke out in a gun-cotton magazine; the fire began slowly, the gun-cotton simply decomposed and burnt. After this, the fire spread, and eventually a moment arrived when the gas generated could not escape sufficiently quickly, and thus collected, it acted the part of a detonator and caused the remainder of the gun-cotton to explode with violence. As a matter of fact, chlorate of potassium requires a much more powerful detonator than does gun-cotton; it is not combustible by itself, but it is probable that at St. Helens a portion of the salt was decomposed by a local fire in the immediate neighborhood of the magazine, and that the rapid accumulation of gas caused the explosion above referred to.

In a contribution to the *Chemistry of Honey*, O. Haenle[1] has made a comparison of (1) pure honey produced by bees from flowers with that (2) produced by bees fed upon sugars and the so-called (3) "artificial" honey. He found that they gave marked and characteristic polarization numbers, as follows: The first was — 35° to — 37°; (2) gave — 3° and (3) — 50°.

Continuing their researches on essential *oil of jasmine*, Hesse and Müller[2] have recently communicated an analytical process suitable for the quantitative determination of the components of a mixture of benzyl acetate. It is based upon the behavior of the said compounds toward a cold 3 per cent. solution of potassium permanganate. This reagent causes the quantitative oxidation of the benzyl alcohol into benzoic acid. Benzyl acetate, on the other hand, is not attacked; while linalool and linalyl acetate are completely decomposed with the formation of acetic and carbonic acids. The authors, after having tested the practical usefulness of their method on artificial mixtures of known composition, have applied it to the examination of essential oil of jasmine, with the result that this oil was found to contain about 65 per cent. of benzyl acetate, 7·5 per cent. of linalyl acetate, 6 per cent. of benzyl alcohol, and 16 per cent. of linalool.

In a paper on the *solanaceous alkaloids*, Hesse[3] calls attention to the fact that pure atropine is optically inactive and that, on keeping, it becomes active, owing to the presence of hyoscyamine. Atropine and hyoscyamine yield tropin and atropic acid according to the following:

$$C_{17}H_{23}NO_3 = C_8H_{15}NO + C_9H_8O_2.$$

Hyoscine and atroscin (in root of *Scopolia atropoides*) yield oscin and atropic acid as follows:

$$C_{17}H_{21}NO_4 = C_8H_{13}NO_2 + C_9H_8O_2.$$

BOTANY.—In a note on a *spurious Alexandria senna*,[4] Henry G. Greenish calls attention to a so-called "Alexandria senna" imported from Suez, which differs from the official drug in that the leaflets are obovate in outline, maybe 2 centimetres by 1 centimetre, have a rounded mucronate apex and distinct primate venation. The upper surface is glabrous and the lower pubescent. The odor is senna-like, the taste being mucilaginous. In powder the peculiar papillæ-like epidermal cells of the under surface, resembling those in coca, are characteristic.

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[1] *Pharm. Zeit.*, 1899, No. 83; *ibid.*, 797.
[2] *Ber. d. Deutsch. Chem. Ges.*, 1899, p. 765; through Schimmel & Co.'s Report, October, 1899.
[3] *Ann. d. Chem.*, 1899, Bd., 309, p. 75.
[4] *Pharm. Jour.*, 1899, p. 470.

The drug, which is nowadays on the market under the name of *opopanax*, is almost certainly derived from *Balsamodendron Kafal*, Kunth, a plant of the natural order Burseraceæ. The true opopanax, of the natural order Umbelliferæ, is difficult to obtain, and is derived, as is generally accepted, from *Opopanax Chironium*, Koch (*Ferula Opopanax*, L.). A chemical examination of undoubtedly genuine opopanax has recently been made by A. Kniti.[1] The essential oil was separated from the bulk by shaking the alcoholic resin solution with petroleum ether. By treatment with bisulphite solution, a brown fat was isolated from the oil, which, by sublimation between watch-glasses, produced white, odorless needles, M. P. 135–134°, formula $C_{20}H_{10}O_7$. It has received the provisional name "oponal." The oil, upon fractional distillation, yielded first a colorless distillate, with an odor like lovage, and afterward a portion colored blue. In the neck of the retort, crystals of "oponal" separated out.

The investigations of Leprince[2] on the bark of the *Rhamnus Purshianæ* confirm the presence of chrysarobin, chrysophanic acid and emodin.

PHARMACOLOGY.—As a result of a series of experiments on the pharmacology and therapeutics of *Veratrum album* and *Veratrum viride*, H. C. Wood and H. C. Wood, Jr.,[3] conclude that the only evidence of differences in action which they have been able to obtain is that *Veratrum album* in toxic doses more frequently purges than does *Veratrum viride*, and that some specimens of *Veratrum album* are stronger than specimens of *Veratrum viride*. The authors believe that, inasmuch as there is hardly any conceivable difference in the action of therapeutic doses of the two plants, it would be proper for the U.S.P. to recognize both species, but as any difference between the two veratrums is in favor of the American drug as less apt to disturb intestinal digestion, the recognition of the European drug seems of doubtful expediency.

According to the experiments of M. P. O. Vejux-Tyrode[4] it appears that the tincture of the brown seeds of *strophanthus* is much more toxic than that of the green seeds, whilst on the other hand the green seed tincture has a much more marked action on the heart. Dr. Rusby[4] believes that these experiments prove the existence of two distinct principles, a "toxic principle" and a "cardiant principle," although they have not been isolated. He thinks that the two plants yielding these seeds are specifically distinct. Should these results be confirmed, it follows that the green seeds, or those of *Strophanthus Kombé*, Oliver, should alone be specified and described in the U.S.P.

The poisonous principles in fungi may be brought from a chemical consideration of the subject, according to Kobert,[5] into either (1) the acids, *e.g.*, helvellic acid; (2) alkaloids or alkaloid-like substances, as muscarin and neurin, or (3) albuminoid or albuminoid-like compounds, as the enzymes and toxalbumins of fungi. From a pharmaco-pathological standpoint they may be divided (if we except ergot) into those (1) acting purely upon the nerves, as muscarin and fungous-atropin; (2) those that produce local irritation, as in various species of Lactarius and Russula; (3) and those acting primarily upon the blood, as the helvellic acid of Lorchel and the phallin of *Amanita phalloides*.

[1] *Archiv. d. Pharm.*, 1899, p. 256, through Schimmel & Co.'s Report, October, 1899.
[2] *Compt. Rend.*, 1899, T., 129, p. 60; *Pharm. Zeit.*, 1899, p. 822.
[3] *Amer. Jour. Med. Sci.*, 1899, p. 562; *Med. Chronicle*, 1899, p. 107.
[4] *Amer. Jour. Med. Sci.*, July, 1899; *Med. Chronicle*, 1899, p. 176.
[5] *D. Aertze. Zeit.*, 1899, No. 11; *Pharm. Zeit.*, 1899, p. 799.

Many attempts have been made to free *tobacco* from its nicotine, but no one as yet has completely solved the problem. Stern[1] thinks the method of Gerold the best yet devised. It consists in treating tobacco with a decoction of tannic acid (15 grammes) and oil of origanum (30 grammes); water, 750 c.c., to be boiled down to 550 c.c. After the tobacco has absorbed the liquid it is treated with moderate pressure and heat. With cigars made from tobacco thus prepared, Stern has experimented with patients who were non-smokers and got practically no disturbance of the heart, respiration or nervous system.

Bulletin des Sciences Pharmacologiques is the title of a new pharmacological journal which contains the names of over forty collaborators who are well known in pharmaceutical and medical circles.

BACTERIOLOGY.—It is a matter of great concern that pharmacists generally appreciate the value of vaccination and the treatment of diphtheria by antitoxin. It is a matter of record how in Germany, where in 1871, with a population of 50,000,000, there were lost over 140,000 lives by *smallpox*, and there is at the present time, since vaccination has been rendered compulsory in that country, a mortality which from the same cause has dwindled to an almost nominal figure. "The anti-vaccinationists claim that the ravages of disease have been stayed, not by means of vaccination, but because of the great advances made in municipal and domestic hygiene. This contention is, to a very large extent, an idle one; personal cleanliness and good sanitation may effect something in this direction. In the case, however, of a susceptible person directly exposed to the contagion of smallpox, these would be but slender reeds on which to lean. Effective vaccination is the only reliable safeguard. Much of the objection urged formerly against vaccination was for the reason that it was often carelessly performed and that the lymph was frequently not aseptic and consequently calculated to induce infection. With the introduction of carefully prepared glycerinated vaccine lymph, all fear of danger from these sources has been completely eliminated, and if lymph thus prepared is used in place of the old-fashioned points, no unpleasant effects, such as sore arms, fever or scars, will follow vaccination. We would earnestly impress upon the minds of our readers that vaccination does not only concern the individual, but is a matter of the highest importance to the public at large, and parents, guardians and employers who do not insist on its performance are guilty of a grave dereliction of duty."[2]

At the last meeting of the American Medical Association, the Section on State Medicine had some interesting papers, followed with discussion, on the *Treatment of Diphtheria with Antitoxin*. In Denver, the mortality from diphtheria has been reduced from 28·7 per cent. in 1894, before the antitoxin was employed, to 8·8 per cent. in 1898. In the city of Chicago the yearly average of deaths from diphtheria for 1886 to 1895 was 1,417; between 1896 and 1898, the yearly average was reduced to 851—thus an annual saving of 566 lives. The statistics for all parts of this country, as well as abroad, show a similar reduction in mortality for diphtheria since the employment of the treatment with antitoxin. "By the timely and intelligent employment of the antitoxin, epidemics can be controlled, severe cases are rendered mild and

[1] *Med. Rev. of Reviews*, April, 1899; *Pediatrics*, July, 1899.
[2] *Pediatrics*, 1899, p. 410.

laryngeal complications are less common. In a word, no more powerful resource than the antitoxin of diphtheria has been added to the armamentation of the physician since the discovery and introduction of vaccination for smallpox."[1] However doubtful the value of vaccination and use of antitoxins may seem to some, the statistics which are at hand regarding the successful treatment of diphtheria and stamping out of smallpox would indicate that it is not only sanitary measures which are valuable, but that the employment of vaccine and antitoxin that are properly prepared, sanitarily preserved and properly applied have in great measure contributed to the notable reduction of the mortality due to smallpox and diphtheria. Pharmacists ought to be prepared to supply these remedial agents at a moment's notice, and it is a grave dereliction of their duty towards the medical profession and the public not to be able to do as required.

AMERICAN PHARMACEUTICAL ASSOCIATION.

SCIENTIFIC SECTION.

The following is a list of the queries submitted by Committee on Scientific Papers:

(1) A paper on Urine and bacteriological examinations by pharmacists.

(2) Cannot disinfection of infected houses be undertaken by pharmacists in the smaller cities and towns with profit to themselves? A paper on the methods employed is desired.

(3) To what extent are official plasters employed in the practice of Pharmacy and Medicine?

(4) What has been the effect of Serum therapy on the practice of Pharmacy?

(5) Official Aspidium is said to be difficult to obtain. What is usually supplied for it, and what is the medicinal value of the substitute?

(6) Is it desirable to increase the strength of official Syrup of Hydriodic Acid?

(7) What is the quality of Potassium Iodide and Bromide usually found in the market?

(8) Give a method of making Liquid Petrolatum free from odor and color.

(9) Is it practicable to make Red Mercuric Oxide, commercially, entirely free from Nitric Acid or Nitrates?

(10) What effect has age on Podophyllum, after collection, as to the amount of resin it will yield?

(11) What is the real medicinal value of Carthagena Ipecac?

(12) Have favorable results been obtained by the use of Acetic Acid Fluid Extracts in medicine?

(13) Hydrochloric Acid sold as chemically pure is said to often contain Iodine and Bromine. Is this a fact?

(14) Is the U.S.P. Sulphuric Acid test for organic impurities in Salicylic Acid and Sodium Salicylate too rigid?

(15) Is Salicylic Acid prepared from Oil of Wintergreen more desirable for medicinal use than a carefully prepared synthetic product?

(16) Is the Oil of Cade usually found in the market such as the U.S.P. describes?

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[1] *Jour. Amer. Med. Asso.*, December 16, 1899.

(17) Some pills sold as Quinine Sulphate are found to approach in solubility in water Quinine Bisulphate. Is it proper to sell such pills for Pills of Quinine Sulphate? Examine commercial samples.

(18) Is it practicable to make a compressed tablet which, when added to water, will make Liquor Calcis of the strength of the U.S.P.?

(19) What Fluid Extracts are best made from "green drugs?"

(20) What official solid extracts can be replaced by extracts in powdered form? Give methods for making the same.

(21) Give a formula for making effervescing tablets of Lithium Citrate, which will yield a product reasonably permanent.

(22) What is the most satisfactory diluent for use in making hypodermatic tablets?

(23) Asafetida of commerce is said not to conform with the U.S.P. as to its solubility in alcohol. Should the requirement be changed, and if so, what standard should be adopted?

(24) Embalming solutions are now largely employed by undertakers. Would not the manufacture and sale of these solutions be a proper and profitable business for pharmacists? Give reliable formula for their manufacture.

(25) A paper on "Notes and Observations" of interest to pharmacists.

MINUTES OF THE COLLEGE MEETING.

A quarterly meeting of the members of the Philadelphia College of Pharmacy was held on Thursday, December 28, 1899, at the College, 145 North Tenth Street. Twenty-two members were present; Wm. J. Jenks presided. The minutes of the meeting of September 25th were read and approved. The minutes of the Board of Trustees for the meetings of October, November and December were read and approved.

Mr. Beringer stated that a committee of the Board of Trustees was at work upon a revision of the by-laws of the Board, and suggested that the College should appoint a committee to compile any amendments to the by-laws of the College that may have been adopted since their last publication in 1891. On motion, this work was assigned to the committee already appointed by the Board of Trustees.

Professor Remington referred to the work that had been done by the assistant professors in preparing and placing in the cabinet in the reading room, a complete list of the drugs, chemicals and pharmaceutical preparations of the Pharmacopœia, for the use of the students, which is a feature peculiar to this College, and one that is not known to exist in any other of the colleges of pharmacy; and, as this work had not been officially noticed by either the College or the Board of Trustees, he moved that a vote of thanks be tendered the assistant professors for their work, which motion was unanimously agreed to.

The Librarian announced the receipt from Hon. Robert Adams, member of Congress, of the ten volumes of "Richardson's Messages and Papers of the Presidents, from 1789 to 1897," as a donation to the library of the College. On motion, the Librarian was directed to convey to Mr. Adams the thanks of the College for his gift.

Professor Ryan spoke of the death, recently, of Israel J. Grahame, and eulogized his work for the advancement of pharmacy.

Mr. Boring, Mr. Wiegand, Professor Remington and Mr. Ellis followed with high tributes to the integrity, scientific attainments and devotion of Professor Grahame to the profession of pharmacy.

The Committee on Deceased Members was instructed to prepare a suitable memorial notice for publication in the AMERICAN JOURNAL OF PHARMACY.

Mr. Jenks presented to the College, for the library, eight volumes, from 1818 to 1825, inclusive, of the "American Medical Recorder of Original Papers and Intelligence on Medicine and Surgery," conducted by "John Eberle, M.D., member of the American Philosophical Society and of the Academy of Natural Sciences of Philadelphia."

On motion, the thanks of the meeting were extended to Mr. Jenks for his gift.

On motion, the meeting adjourned.

W. NELSON STEM,
Secretary.

MINUTES OF THE PHARMACEUTICAL MEETING.

The regular monthly pharmaceutical meeting was held Tuesday, January 16th, in the Museum of the College, with William McIntyre in the chair.

Dr. Joseph McFarland, of this city, and perhaps best known as the author of a work on "The Pathogenic Bacteria," was the first speaker on the programme, and made a very interesting address on "Immunity, What is It, and Upon What Does It Depend?" The speaker said that in the sense in which the term is ordinarily employed *immunity means resistance to disease*, and that when considered in connection with micro-organisms the subject may be divided into: (1) immunity to infection, and (2) immunity to intoxication. The most important factors to be considered in the production of infection are (1) the *kind* of bacteria, (2) the *number* of bacteria, for the greater the number of bacteria present the greater the resistance required to withstand them, and (3) their *avenue of entrance*, as for instance if certain kinds of bacteria are introduced into the skin they cause no trouble, but if introduced into the stomach, may and do cause serious illness. (4) The *kind of soil* which the bacteria find is also of much importance. If the individual be in such a condition as to favor the growth of the bacteria introduced into his organism, he is said to be susceptible to their influence. If, however, his system is in such a condition as not to favor the development of the micro-organisms, he is said to be immune.

Immunity to infection may be divided into two distinct classes, namely, *active* and *passive*, the former being dependent upon the natural powers of the individual, while the latter is a condition brought about by artificial means. Active immunity represents a sort of combat between the individual and the bacteria, and this phase of the subject has furnished a theme for much scientific speculation. Two theories are in vogue for explaining it, viz., the cytogenic and the hematogenic. According to the cytogenic theory, there are certain cells in the body which are comparatively free and independent entities, and which wander about in response to certain stimuli. These are the leucocytes or white blood corpuscles, and it is held by some investigators, prominent among them being Metchnikoff, that they have the

power of destroying bacteria; that, according to the law of chemotaxis, they are attracted to the region infected by the bacteria, and that thus they act as the scavengers of the system. According to the hematogenic theory, whose chief advocate is Büchner, the blood contains certain substances, known as alexins, which are destructive to bacteria.

Passive immunity is conferred upon the individual by certain substances, such as antitoxins, comminuted nervous tissue, molecular matters, etc., which are prepared without his influence, but by receiving which (by hypodermic injection, etc.) he becomes immune. The best illustration is in the use of antitoxins for the prevention of disease.

Immunity to intoxication is that resulting from the resistance to, or the destruction of, toxins. It thus appears that immunity means not only the ability to combat the bacteria themselves, but the ability to resist the influence of their poisons as well.

In this connection the speaker alluded to the experiments whereby it has been found that by progressive intoxication a new substance is produced in the blood, which becomes antitoxic, this being the origin of the antitoxins.

Among those taking part in the discussion of the address were Prof. Jos. P. Remington, Dr. C. B. Lowe and Messrs. Jos. W. England and L. F. Kebler.

Professor Remington said that the subject was one fraught with much interest, and inquired whether immunity could be transferred through heredity, alluding in this connection to the natural history illustrations of protective mimicry.

Dr. Lowe spoke of examples of the immunity of young infants to smallpox as due, perhaps, to hereditary influences.

In replying to the previous speakers, Dr. McFarland said that acquired immunity is not hereditary, and that the best illustration of this is furnished by the exanthematous fevers of childhood to which we, who have had them, are immune, though our children are not. Referring to the investigations of Ehrlich, he said that forced immunity may be transferred to the offspring, as shown in the case of mice securing immunity through milk.

In response to a query by Mr. England in regard to the chemical nature of the antitoxins, Dr. McFarland said that there were several views on this point. Some investigators consider them to be proteid substances, while others, like Behring, believe them to be in the nature of forces, and still others look upon them as ferments. On account of the difficulty of separating them from the serum, their exact chemical nature cannot readily be determined. They are precipitated along with the globulins by magnesium sulphate, but no one has yet separated them pure.

Lyman F. Kebler, having been engaged in the examination of certain of the medicinal salts for some time past, presented a paper on "Bismuth Salicylate, Basic." (See page 65.)

Referring to the constitution of some of the bismuth salts, Mr. Kebler said that practically $BiONO_3H_2O$ does not exist. On the other hand, bismuth salicylate is so uniform that there should be no trouble as to its therapeutic effect, and any difference which may have been noted in this respect he thought was probably due to a confusion of the normal and basic salts.

Replying to a series of questions asked by Mr. England in the discussion of the paper, Mr. Kebler said that he had never been able to prepare satisfactory acid

salicylate of bismuth; (2) that it is difficult to answer the question as to the amount of free salicylic present in the basic salicylate, as the addition of alcohol liberates a portion of the acid normally present; and (3) that he had found the Kjeldahl method to be the most simple for estimating the amount of nitrate in bismuth salicylate.

F. W. Haussmann, having been experimenting for some time with the formulas for certain of the official syrups, presented a paper suggesting improved methods for syrup of orange, syrup of wild cherry and syrup of rose.

Mr. E. M. Boring, in remarking on the formula for syrup of orange, said that just in proportion as the syrup is rendered more clear the less flavor it will have. He recommended rubbing fresh orange peel with sugar in a mortar, and also adding the juice of the fruit, the proportion being one orange to one pint of syrup.

A short but interesting communication, entitled "Notes on Beeswax," which was received from Dr. H. V. Arny, was read by Dr. Henry Kraemer. (See page 73.) Before reading the paper, Professor Kraemer remarked that Dr. Arny has entirely recovered from his serious illness of last summer, which he was sure would be welcome news to those present.

Mr. England called attention to a specimen of fresh or uncured vanilla bean which had been received by Mr. George M. Beringer, from Messrs. Dodge and Olcott.

Professor Kraemer exhibited a number of samples of commercial arrowroots, viz., Bermuda, Montserrat, St. Vincent and American, and called attention to the fact that he had been using for several years in his classes Montserrat arrowroot obtained from Evans & Sons, of New York, and that it showed better than any other arrowroot the typical starch grains, and that a microscopic as well as a chemical examination showed it to be as free from foreign impurities as that of Bermuda arrowroot. Comparing it with St. Vincent it was very much better.

On motion, the meeting adjourned.

FLORENCE YAPLE,
Secretary pro tem.

MAXIMUM DOSE.—E. L. Abogado compares (*Chronica Med. Mexicana; Jour. Amer. Med. Assoc.*, 1900, p. 230) the maximum doses of opium as given in the various pharmacopœias of the world, and finds them to differ amazingly. The dose of the powder, for instance, according to the French Codex, is 1 to 10 centigrammes; German, 15 to 20, and Foy's Formularly gives 4 to 5 grammes as the maximum dose. The writer urges the general adoption of the statement of the *initial* dose for an adult, leaving it to the physician to determine how much this can be increased by observation of the effect on the patient.

ASPIDIUM SPINULOSUM has been shown by Lamen (*Brit. and Col. Drug.*, 1899, p. 458) to be a useful anthelmintic.